

No Further CERCLA Action for Sites Within Operable Units (OUs) 3, 5, 10 and 11 Record of Decision

July 1998



Installation Restoration Program
Loring Air Force Base, Maine

FINAL

LORING AIR FORCE BASE

**NO FURTHER CERCLA ACTION FOR SITES WITHIN
OPERABLE UNITS 3, 5, 10, AND 11
RECORD OF DECISION**

July 1998

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TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page No.</u>
	DECLARATION FOR THE RECORD OF DECISION.....	D-1
	SITE NAME AND LOCATION.....	D-1
	STATEMENT OF BASIS AND PURPOSE.....	D-1
	DESCRIPTION OF THE SELECTED REMEDIES.....	D-2
	DECLARATION.....	D-5
1.0	SITE NAME, LOCATION, AND DESCRIPTION.....	1-1
2.0	SITE HISTORY AND RESPONSE ACTIVITIES.....	2-1
2.1	SITE HISTORY.....	2-1
2.1.1	Operable Unit 3.....	2-2
2.1.2	Operable Unit 5.....	2-6
2.1.3	Operable Unit 10.....	2-9
2.1.4	Operable Unit 11.....	2-11
2.2	RESPONSE ACTIVITIES.....	2-16
3.0	COMMUNITY PARTICIPATION.....	3-1
4.0	SCOPE AND ROLE OF RESPONSE ACTION.....	4-1
5.0	SUMMARY OF SITE CHARACTERISTICS AND RISKS.....	5-1
5.1	BASELINE RISK ASSESSMENT.....	5-1
5.1.1	Human Health Risk Assessment.....	5-2
5.1.2	Ecological Risk Assessment.....	5-3
5.2	OPERABLE UNIT 3.....	5-4
5.2.1	EOD Range.....	5-4
5.2.2	Outdoor Firing Range.....	5-5
5.3	OPERABLE UNIT 5.....	5-7
5.4	OPERABLE UNIT 10.....	5-8
5.4.1	PH 8210.....	5-9
5.4.2	PH 8270.....	5-10
5.4.3	FSSB.....	5-11
5.5	OPERABLE UNIT 11.....	5-12

**FINAL
NO FURTHER CERCLA ACTION FOR SITES WITHIN
OPERABLE UNITS 3, 5, 10, AND 11
RECORD OF DECISION**

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page No.</u>
5.5.1	RMSA	5-12
5.5.2	VMB	5-14
5.6	SUMMARY OF SITE CONDITIONS	5-19
6.0	DESCRIPTION OF THE NO FURTHER CERCLA ACTION ALTERNATIVES	6-1
7.0	DOCUMENTATION OF NO SIGNIFICANT CHANGES	7-1
8.0	STATE ROLE	8-1

GLOSSARY OF ACRONYMS AND ABBREVIATIONS
REFERENCES

APPENDICES

APPENDIX A	TRANSCRIPT OF PUBLIC MEETING
APPENDIX B	RESPONSIVENESS SUMMARY
APPENDIX C	LETTER OF CONCURRENCE

**FINAL
NO FURTHER CERCLA ACTION FOR SITES WITHIN
OPERABLE UNITS 3, 5, 10, AND 11
RECORD OF DECISION**

LIST OF FIGURES

Figure No.	Title
1-1	Site Location
1-2	Location of OU 5, OU 10, and OU 11 Sites
2-1	Location of OU 3 Sites
2-2	Location of OU 5 Sites
2-3	Location of OU 10 Sites
2-4	Location of OU 11 Sites

**FINAL
NO FURTHER CERCLA ACTION FOR SITES WITHIN
OPERABLE UNITS 3, 5, 10, AND 11
RECORD OF DECISION**

LIST OF TABLES

Table No.	Title
5-1	Summary of Site Conditions

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

The Loring Air Force Base National Priorities List (NPL) Site (hereinafter, the Site) is located in Aroostook County, Maine. This decision document addresses the source areas (i.e., surface and subsurface soils) for sites within Operable Units (OUs) 3, 5, 10, and 11. Groundwater and surface water associated with the OUs will be addressed under OU 12 and OU 13 at the Site, respectively.

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial actions for the source areas at the following sites located within OUs 3, 5, 10, and 11 at the Site:

- OU 3 Explosive Ordnance Disposal (EOD) Range
 Outdoor Firing Range

- OU 5 Base Exchange Service Station (BXSS)

- OU 10 Pumphouse (PH) 8210
 PH 8270
 Former Solvent Storage Building (FSSB)

- OU 11 Refueling Maintenance Shop Area (RMSA)
 Vehicle Maintenance Building (VMB)

These remedial actions were chosen, and this decision document developed, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (U.S. Environmental Protection Agency [USEPA], 1990). This decision document is based on the Site Administrative Record, which was developed in accordance with Section 113(k) of CERCLA and is available for public review at the Air Force Base Conversion Agency Office, 5100 Texas Road, Limestone, Maine.

DECLARATION

This decision document presents the No Further CERCLA Action Decisions for the source areas at the EOD Range site and Outdoor Firing Range site in OU 3; the BXSS site in OU 5; the PH 8210 site, the PH 8270 site, and the FSSB site in OU 10; and the RMSA site and VMB site in OU 11. The United States Air Force (USAF) has selected No Further CERCLA Action for the source areas of these sites because the contaminants (1) have been removed to acceptable risk levels under CERCLA; (2) are at concentrations and depths that do not pose an unacceptable risk under CERCLA; or (3) are petroleum-related and are being addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities [MEDEP, 1996]; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater [MEDEP, 1995]).

The State of Maine Department of Environmental Protection (MEDEP) concurs with the selected remedies for the source areas (i.e., surface and subsurface soils) at the above listed sites located within OUs 3, 5, 10, and 11.

DESCRIPTION OF THE SELECTED REMEDIES

The USAF and USEPA, with concurrence of the MEDEP, have determined that No Further CERCLA Action is necessary for the source areas (i.e., surface and subsurface soils) at the EOD Range site and Outdoor Firing Range site in OU 3; the BXSS site in OU 5; the PH 8210 site, the PH 8270 site, and the FSSB site in OU 10; and the RMSA site and VMB site in OU 11.

The USAF has evaluated the potential risks to human health and the environment at each of these sites and developed the site-specific remediation goals for the source areas at each of these sites based on the future land use determinations made in the April 1996 Record of Decision for the Disposal of Loring Air Force Base, Maine (hereinafter Disposal ROD). Therefore, the No Further CERCLA Action decisions for the source areas at each of these sites is based on the assumption that future land use at each site shall be in accordance with the Disposal ROD (i.e., that real property comprising the site shall be parcelled, disposed of, and reused in accordance with the Disposal ROD).

No Further CERCLA Action is necessary for the soil at the EOD Range site in OU 3 because the soil at the site does not pose an unacceptable risk under CERCLA to human health and ecological receptors. The USAF will clear the site of any EOD-related residuals and the site will not be released for reuse until the clearance is approved by the Department of Defense Explosive Safety Board, anticipated in 1999. No Further Action is necessary for the soil at the Outdoor Firing Range site because a previous response at the site eliminated the need to conduct additional remedial action, and the soil at the site does not pose an unacceptable risk under CERCLA to human health and ecological receptors.

DECLARATION

No Further CERCLA Action is necessary for the soil at the BXSS site in OU 5. In accordance with a Consensus Statement signed by the USAF, USEPA, and MEDEP in May 1995, petroleum-related soil contamination at the BXSS site will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater). The contaminated soil and sediments in the drainage ditch at the BXSS site have been removed and this portion of the site no longer poses an unacceptable risk under CERCLA to human health and ecological receptors. Restoration of the wetland impacted by the excavation activities will be conducted in accordance with the Mitigation Process Plan for the Loring Wetlands Management Program, prepared in accordance with applicable federal and state regulations and approved by the USEPA and MEDEP in 1995. The No Further CERCLA Action decision for the BXSS site does not constitute a finding by the USEPA that adequate protection has been achieved at the site.

No Further Action is necessary for the soil at the PH 8210 site, the PH 8270 site, and the FSSB site in OU 10 because the removal actions conducted at these sites between 1995 and 1997 have removed the contamination sources and the remaining soil at the sites does not pose an unacceptable risk to human health and ecological receptors.

No Further CERCLA Action is necessary at the RMSA site and the VMB site in OU 11 because CERCLA contaminants have been removed or are at concentrations and depths that do not pose an unacceptable risk under CERCLA to human health and ecological receptors. The petroleum-related soil contamination remaining at these sites is not regulated under CERCLA. This petroleum-related contamination will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater). The No Further CERCLA Action decision for the RMSA site and VMB site does not constitute a finding by the USEPA that adequate protection has been achieved at these sites.

Although the USAF and USEPA, with concurrence of the MEDEP, have determined that No Further CERCLA Action is necessary for the source areas at the sites referenced above, further CERCLA action may be required to address other media (i.e., groundwater and surface water) at these sites. The groundwater and surface water associated with the sites shall be addressed in OU 12 and OU 13, respectively.

DECLARATION

The USEPA has the authority to reopen or amend the No Further CERCLA Action decisions presented in this decision document even if all or part of the Site is deleted from the NPL. The USEPA may exercise such authority at any of the sites referenced above in circumstances including, but not limited to, (1) if, in the future, conditions at the site indicate that an unacceptable risk to human health or the environment may result from exposure to contaminants at the site, or (2) if there is a change in land use at the site from the reuse determined in the Disposal ROD for the real property comprising the site. The USAF shall, in consultation with the USEPA and MEDEP, consider the imposition of proper institutional controls to restrict the future land uses of the sites and assure proper notification of future owners. The USAF is prepared to initiate such controls where it, the USEPA, and MEDEP determine that such controls would be appropriate.

The site-specific remediation goals developed for the source areas at each of the sites referenced above are based on the future land use determinations made in the Disposal ROD. Since these remediation goals will not allow for unrestricted use and unlimited exposure, the USAF will conduct five-year site reviews at each site in accordance with CERCLA Section 121 and the NCP. The USAF will continue such five-year site reviews for each site until the levels of contaminants remaining at the site allow for unrestricted use and unlimited exposure.

DECLARATION

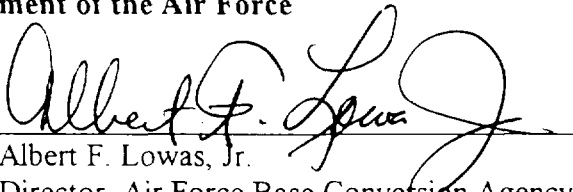
The USAF and USEPA, with concurrence of the MEDEP, have determined that No Further CERCLA Action is necessary for the source areas (i.e., surface and subsurface soils) at the EOD Range site and Outdoor Firing Range site in OU 3; the BXSS site in OU 5; the PH 8210 site, the PH 8270 site, and the FSSB site in OU 10; and the RMSA site and VMB site in OU 11.

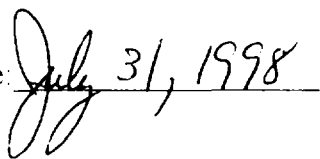
The USAF has evaluated the potential risks to human health and the environment at each of these sites and developed the site-specific remediation goals for the source areas at each of these sites based on the future land use determinations made in the Disposal ROD. Therefore, the No Further CERCLA Action decisions for the source areas at each of these sites is based on the assumption that future land use at each site shall be in accordance with the Disposal ROD (i.e., that real property comprising the site shall be parcelled, disposed of, and reused in accordance with the Disposal ROD).

Since the remediation goals referenced above will not allow for unrestricted use and unlimited exposure, the USAF will conduct five-year site reviews at each site addressed in this decision document, in accordance with CERCLA Section 121 and the NCP, until the levels of contaminants remaining at each such site allow for unrestricted use and unlimited exposure.

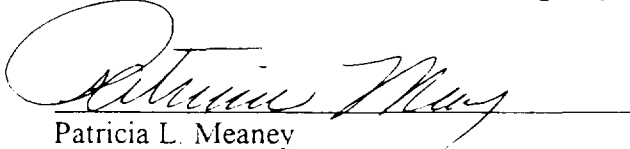
Concur and recommend for immediate implementation:

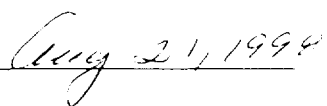
Department of the Air Force

By: 
Albert F. Lowas, Jr.
Director, Air Force Base Conversion Agency

Date: 

United States Environmental Protection Agency

By: 
Patricia L. Meaney
Director, Office of Site Remediation and Restoration
U.S. Environmental Protection Agency, Region I

Date: 

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The Loring Air Force Base National Priorities List (NPL) Site (hereinafter, the Site) is located in Aroostook County, in northern Maine. The Site is bordered on the south and east by the Town of Limestone, on the north by the towns of Caswell and Connor, and on the west by the City of Caribou. The Site is approximately three miles west of the United States/Canadian border and covers approximately 9,000 acres (Figure 1-1).

There are currently several areas of concern that have been identified within the Site, based on previous investigations. These areas have been organized into Operable Units (OUs) for investigation and remediation purposes.

This Record of Decision (ROD) presents the decision that No Further Action is necessary under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for the source areas (i.e., surface and subsurface soils) of specific sites in OUs 3, 5, 10, and 11 at the Site (Figure 1-2). These No Further CERCLA Action sites, discussed in detail in the following sections of this ROD, are:

- OU 3 Explosive Ordnance Disposal (EOD) Range
 Outdoor Firing Range

- OU 5 Base Exchange Service Station (BXSS)

- OU 10 Pumphouse (PH) 8210
 PH 8270
 Former Solvent Storage Building (FSSB)

- OU 11 Refueling Maintenance Shop Area (RMSA)
 Vehicle Maintenance Building (VMB)

The United States Air Force (USAF) has evaluated the potential risks to human health and the environment at each of these sites and developed the site-specific remediation goals for the source areas at each of these sites based on the future land use determinations made in the April 1996 Record of Decision for the Disposal of Loring Air Force Base, Maine (hereinafter, Disposal ROD) (Air Force Base Conversion Agency [AFBCA], 1996). Therefore, the No Further CERCLA Action decisions for the source areas at each of these sites is based on the assumption that future land use at each site shall be in accordance with the Disposal ROD (i.e., that real property comprising the site shall be parcelled, disposed of, and reused in accordance with the Disposal ROD).

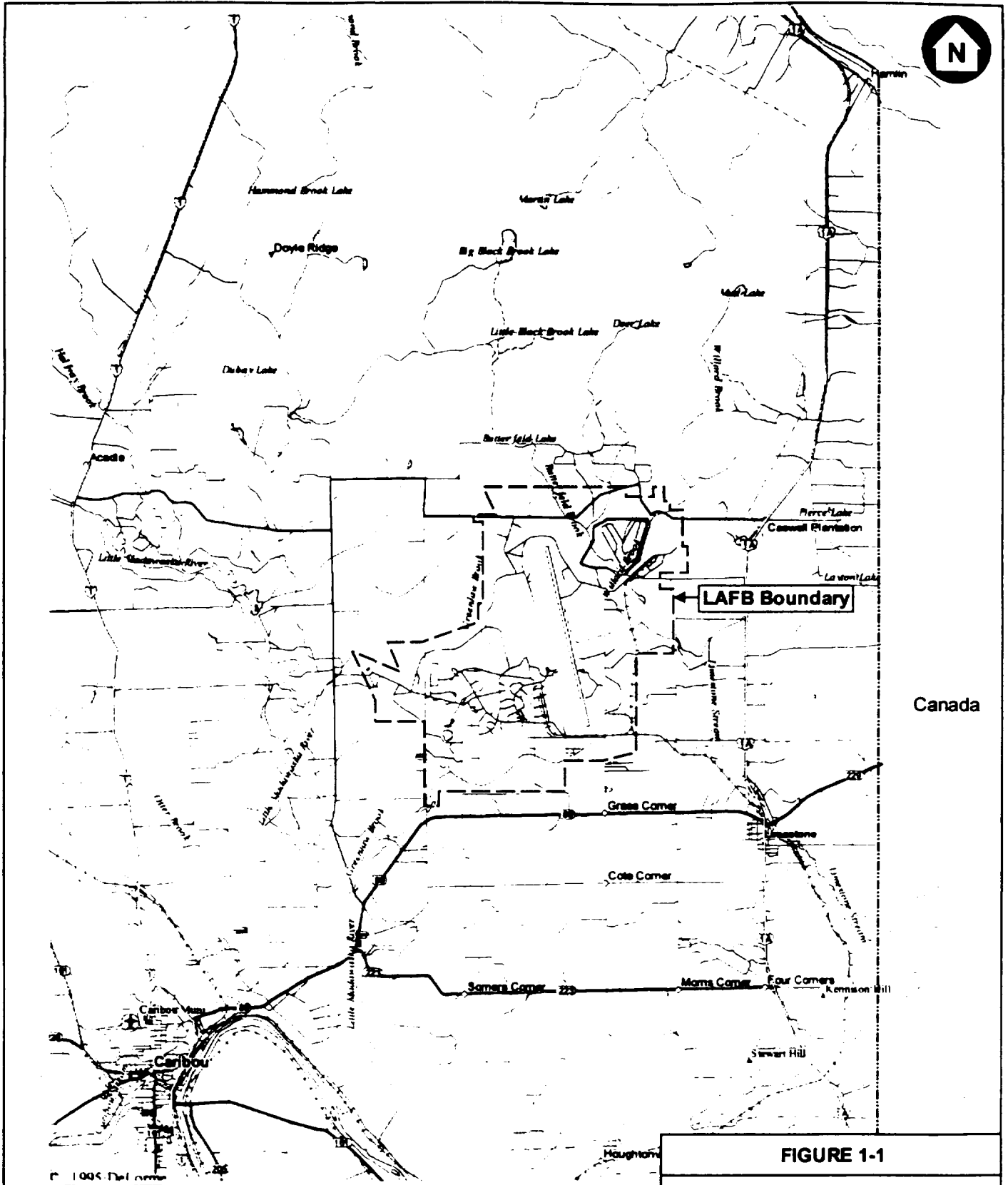


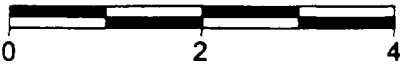
FIGURE 1-1

SITE LOCATION

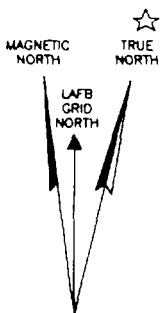
**LORING AIR FORCE BASE
LIMESTONE, MAINE**

Source: DeLorme Street Atlas USA CD, Version 3.0,
Dated 1995. Modified by ABB-ES, 1998.

Scale in Miles



Map Location



NOTE:
 - LORING AFB GRID NORTH IS 13° 16' 03" WEST OF TRUE NORTH
 - MAGNETIC NORTH IS APPROXIMATELY 21' WEST OF TRUE NORTH AND 7' 44" WEST OF LORING AFB GRID NORTH

OU5 SITES

OU10 SITES

OU11 SITES

NOTE: OU3 SITES ARE SCATTERED THROUGHOUT THE BASE.

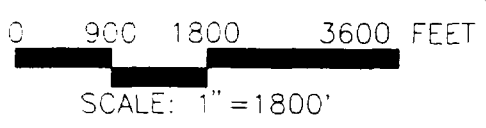


FIGURE 1-2
 LOCATION OF
 OU5, OU10, AND
 OU11 SITES
 LORING AIR FORCE BASE
 LIMESTONE, MAINE

SECTION 1

Although the USAF and United States Environmental Protection Agency (USEPA), with concurrence of the Maine Department of Environmental Protection (MEDEP), have determined that No Further CERCLA Action is necessary for the source areas at these sites, further CERCLA action may be required to address other media (i.e., groundwater and surface water) at these sites. The groundwater and surface water associated with the sites shall be addressed in OU 12 and OU 13, respectively.

2.0 SITE HISTORY AND RESPONSE ACTIVITIES

This ROD addresses the source areas (i.e., surface and subsurface soils) of sites in OUs 3, 5, 10, and 11. The following subsections summarize the history of the sites within these OUs.

2.1 SITE HISTORY

Loring Air Force Base (LAFB) was constructed in the late 1940s to support long-range bomber aircraft for the Strategic Air Command. Principal base operations included aircraft maintenance, refueling, munitions storage and maintenance, and flightline operations. Many of these activities required the handling, storage, or disposal of hazardous substances and petroleum products. As a result of these activities, hazardous substances and petroleum products have entered the environment through accidental spills, leaks in supply piping, landfilling operations, burning of liquid wastes during firefighter training exercises, and the cumulative effects of operations conducted at the base's flightline and industrial areas. As part of the Department of Defense's Installation Restoration Program (IRP), the USAF initiated activities to identify, evaluate, and remediate former disposal or spill sites containing hazardous substances and petroleum products.

Since initiation of the IRP, the base was placed on the USEPA's NPL of sites and is to be remediated according to the Federal Facility Agreement (FFA), an agreement under Section 120 of CERCLA signed by the USAF, the USEPA, and the MEDEP on January 30, 1991, as amended (FFA, 1991). Following the signing of the FFA, LAFB was placed on the U.S. Congress Base Closure List and was closed in September 1994.

In 1994, a Bottom Up Program Review was conducted as part of the President's five-point fast track clean-up initiative for closing military bases. Recommendations included performing early actions at sites where risks were well-defined. In accordance with CERCLA, Engineering Evaluation/Cost Analysis (EE/CA) reports were developed for source control removal actions. The purpose of the source control removal actions is to address soil contamination identified at areas within the OUs during Remedial Investigation (RI) activities.

The Disposal ROD (AFBCA, 1996) was signed in April 1996. It presents the USAF's decisions for the parcelization, disposal, and reuse of the real property comprising the Site. The USAF has evaluated the potential risks to human health and the environment at each of the sites addressed in this No Further CERCLA Action ROD, and has developed the site-specific, risk-based

SECTION 2

remediation goals for the source areas at each of these sites based on the future land use determinations made in the Disposal ROD.

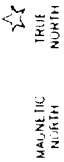
These remediation goals were developed for soil at sites where source control removal actions were to be conducted. The methodology used for development of the remediation goals is presented in the EE/CA reports prepared for the source control removal actions.

More particularly, site-specific, risk-based remediation goals were developed considering both current and projected future land use. Future land use for each site was based on the determinations made in the Disposal ROD. Remediation goals that are protective of human health and the environment were established based on USEPA and MEDEP Risk Assessment Guidance and the Loring Air Force Base (LAFB) Risk Assessment Methodology (Hazardous Waste Remedial Actions Program [HAZWRAP], 1994). Human health remediation goals were calculated using a 1E-06 risk level for carcinogens and a Hazard Index of one for noncarcinogens. Ecological remediation goals were developed by back-calculating the ecological models to obtain soil concentrations that would result in a Hazard Quotient of one. The potential effect of source area contamination on groundwater quality was also considered in the development of remediation goals. Soil leaching model results were used to develop soil remediation goals that would result in contaminants in groundwater at concentrations less than the federal Safe Drinking Water Act Maximum Contaminant Levels (MCLs) or the Maine Maximum Exposure Guidelines (MEGs).

The human health and ecological risk-based values and the soil leaching model results were then compared and the lowest of the three values was selected as the site-specific remediation goal for that contaminant. The established Site background concentration for inorganics and the analytical contract required quantitation limit were also considered in the final selection of the remediation goals.

2.1.1 Operable Unit 3

OU 3 consists of 17 sites that are located throughout the Site (Figure 2-1). A Preliminary Assessment/Site Investigation (PA/SI) was completed for the 17 sites in 1993 (Law Environmental, Inc, [Law, 1994]). Eleven of the sites were identified as RI/Additional Site Investigation (ASI) sites, and further investigation of these sites was recommended.



TRUE NORTH
MAGNETIC NORTH
LAFB GRID NORTH

NOTE:
- LORING AFB GRID NORTH IS 13° 16' 03" WEST OF TRUE NORTH
- MAGNETIC NORTH IS APPROXIMATELY 23° WEST OF TRUE NORTH
- 7° 44' WEST OF LORING AFB GRID NORTH

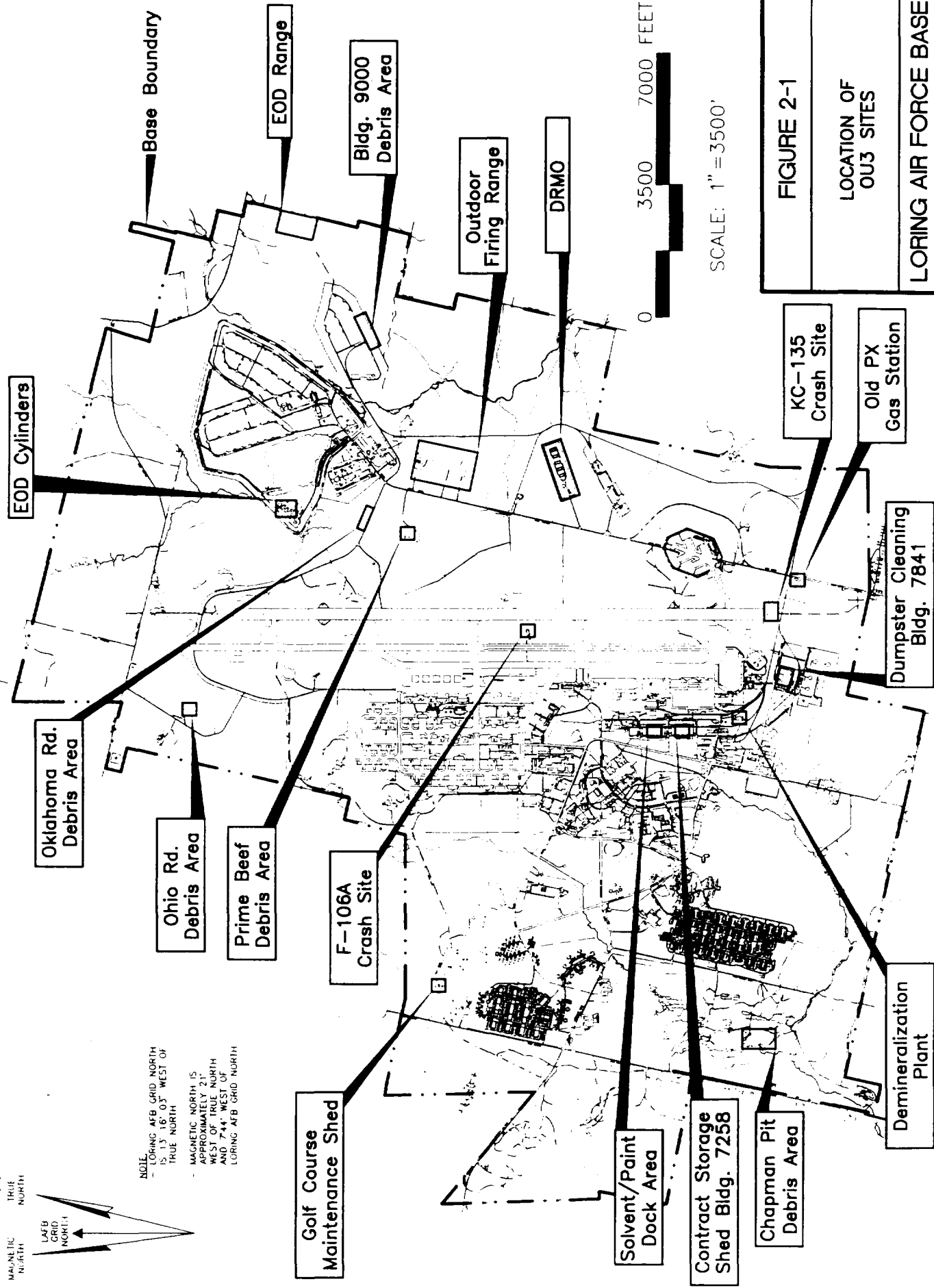


FIGURE 2-1

LOCATION OF
OU3 SITES

LORING AIR FORCE BASE
LIMESTONE, MAINE

SECTION 2

Based on the PA/SI and RI/ASI (Law, 1996a) results, the OU 3 ROD (Law, 1996d), signed in September 1996, determined No Further Action was necessary at 14 of the original 17 sites. These sites were:

- Ohio Road Debris Area;
- Oklahoma Road Debris Area;
- KC-135 Crash Area;
- Dumpster Cleaning Area site/Building 7841;
- EOD Area - Cylinders;
- Golf Course Maintenance Shed Area;
- Chapman Pit Debris Area;
- 9000 Debris Area;
- Solvent/Paint Dock Area;
- Prime Base Engineer Emergency Force (BEEF) Debris Area;
- Buildings 8951 and 8960 (Defense Reutilization and Marketing Organization [DRMO]);
- Old Post Exchange (PX) Gas Station;
- F-106A Crash Area; and
- Demineralization Plant.

The OU 3 ROD selected completion of a remedial action at the Contract Storage Shed to address soil and sediment containing fuel-related compounds and pesticides. In 1997, approximately 2,500 cubic yards (cy) of contaminated soil and sediment were excavated and disposed of in the on-base Landfill 3 (LF-3). Successful remediation of the site was accomplished by removal of the contaminated soil and sediment to achieve the risk-based remediation goals as presented in the OU 3 ROD (Law, 1996d), and is documented in the Remedial Action Report for the Contract Storage Shed (Bechtel Environmental, Inc. [Bechtel, 1997b]).

Because the 15 sites discussed above (i.e., 14 No Further Action sites and the Contract Storage Shed) are included in the OU 3 ROD and the remediation at the Contract Storage Shed is documented in the Remedial Action Report (Bechtel, 1997b), these sites will not be discussed further in this ROD.

The OU 3 ROD determined further investigation was necessary for the two remaining sites, the EOD Range and the Outdoor Firing Range. Only these two sites will be discussed further in this ROD.

EOD Range. The EOD Range site consists of two areas that total approximately 65 acres: a previously investigated southern area and an abandoned northern area. The site was previously used for disposal of ammunition by detonation and burning, and for burial of munitions residue,

spent cartridges, and construction debris. Ordnance disposal activities began in the southern area in the late 1960s. Activities were interrupted during the mid-1970s and resumed in the early 1980s until closure of the EOD range in 1988. Following closure, the site was used for monthly specialized training until closure of LAFB in September 1994. There are no records of use for the northern area of the site and it is believed to be an abandoned EOD range. The presumed perimeter of the abandoned range was determined from the presence of EOD range warning signs or signposts.

Sampling performed at the EOD Range site during the RI/ASI indicated the presence of low concentrations of volatile and semivolatile organic contaminants as well as metals and other explosive-related compounds in site soil. The Supplemental RI/ASI Technical Report (URS Consultants, Inc. [URS, 1998]) recommended No Further CERCLA Action for soil in the EOD Range site based on the human health and ecological risk assessment determination of no unacceptable risk under CERCLA. To prepare the site for reuse as a conservation area, the report recommended that the range be cleared of any potentially unsafe EOD-related residuals. Clearing of ordnance from this site began in the fall of 1997 and is scheduled to be completed in 1998. This site will not be released for reuse until the clearance is approved by the Department of Defense Explosives Safety Board. This clearance is expected in 1999.

Outdoor Firing Range. The Outdoor Firing Range site is located in the east-central portion of LAFB (see Figure 2-1). The range consisted of a small arms firing line used during the entire period that the Site was an active base, a skeet range, and a grenade range. The firing line faces east and is surrounded on three sides by an earthen berm and backstop. The area between the firing line and backstop is relatively flat and primarily grass-covered.

In 1995, as part of a base compliance project, approximately 600 cy of soil contaminated with lead bullets were removed from the backstop at the site (Law, 1996d). The soil was stabilized and disposed at an appropriate, permitted, off-base landfill. During the isolated removal, background soil samples were found to contain lead at concentrations above the Site background levels. The OU 3 ROD determined that further investigation of the Outdoor Firing Range site was necessary.

Supplemental SIs identified lead-contaminated surface soil in front of and behind the small arms firing line. The affected area was determined to be approximately one-third acre in size. A risk assessment indicated that lead concentrations observed in soil do not pose an unacceptable level of risk to future human receptors and the small size of the affected area limits the impact of contamination on ecological receptors (URS, 1998). Based on the risk assessment, the findings of the Supplemental RI/ASI, and the intended reuse of the site as a small arms firing range by the Maine Army National Guard, No Further Action is necessary for the Outdoor Firing Range site.

SECTION 2.

2.1.2 Operable Unit 5

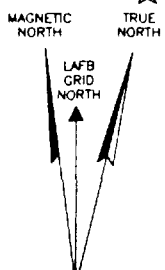
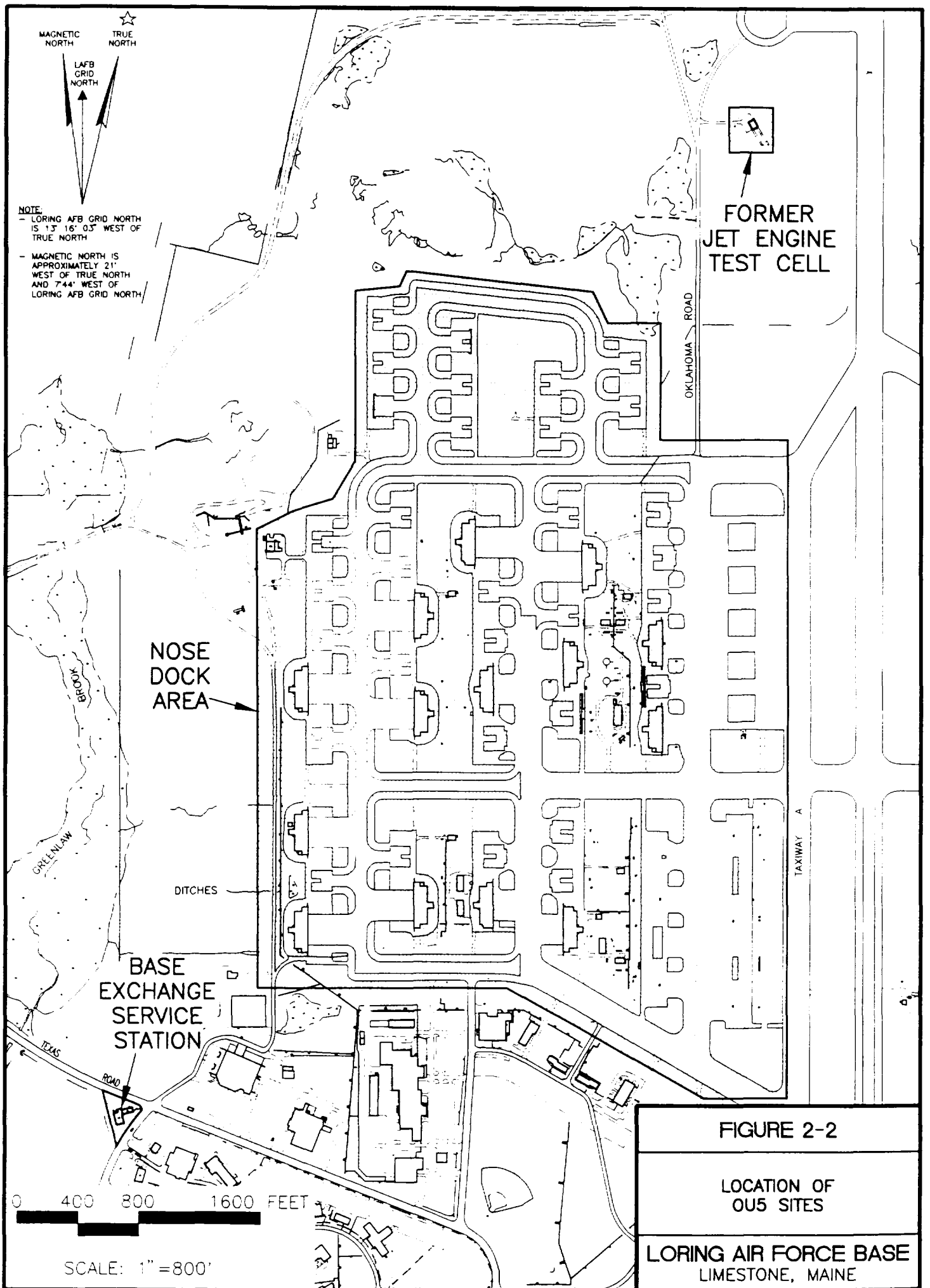
OU 5 is located in the central portion of the Site and consists of three sites: the Nose Dock Area (NDA), the Former Jet Engine Test Cell (FJETC), and the BXSS (Figure 2-2).

NDA. The NDA site is a 300-acre area once used for the storage, maintenance, refueling, and defueling of aircraft. Facilities included subsurface fuel lines, pumphouses, underground storage tanks (USTs), aboveground storage tanks, and subsurface utilities. Storage tanks in the NDA stored JP-4 jet engine fuel and, to a lesser extent, solvents, diesel fuel, gasoline, hydraulic oil, waste oil, heating oil, and anhydrous ammonia. In preparation for base closure, all NDA storage tanks were decommissioned and/or removed in the fall of 1994. The underground fuel distribution lines have been decommissioned and removed (Camp, Dresser & McKee - Federal Programs Corporation [CDM, 1996]).

An RI identified several areas of jet fuel-contaminated soil. Identified contaminants include volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH). An EE/CA prepared for this site recommended excavation and disposal for two areas of shallow soil contamination and bioventing for the deeper fuel-contaminated soil (URS, 1995a). The two areas of shallow soil contamination were excavated in 1995 and the excavated soil was disposed of in LF-3. Site-specific, risk-based remediation goals were met by excavating 735 cy of soil (Bechtel, 1996). The deeper soil contamination surrounding the former eastern fuel lines is currently being addressed with bioventing systems.

A Corrective Action Plan, prepared to meet Maine regulations, proposed the excavation and disposal of additional fuel-contaminated, shallow soil in the western NDA. Excavation of this soil in 1996 removed contamination to concentrations below risk-based remediation goals (Bechtel, 1997a). Contaminated soil surrounding the former western fuel lines and soil and sediment in drainage ditches and other isolated areas in the NDA have been excavated and disposed of in LF-3 (Bechtel, 1997a and 1998a). Because the bioventing systems are currently in operation, the NDA site will be addressed in a future Proposed Plan and ROD, and will not be discussed further in this ROD.

FJETC. The FJETC site occupied approximately 1.2 acres in the north-central portion of the base and was once used to perform various tests on jet engines. Based on the results of an EE/CA (URS, 1995a), a bioventing system was installed and is being operated to treat an approximately 0.5-acre area of soil contaminated with fuel-related compounds. The bioventing system is also being used to remediate chlorinated solvent contamination detected at the site.



NOTE:
 - LORING AFB GRID NORTH IS 13' 16" 03" WEST OF TRUE NORTH
 - MAGNETIC NORTH IS APPROXIMATELY 21' WEST OF TRUE NORTH AND 7' 44" WEST OF LORING AFB GRID NORTH

FORMER JET ENGINE TEST CELL

NOSE DOCK AREA

BASE EXCHANGE SERVICE STATION

FIGURE 2-2

LOCATION OF OUS SITES

LORING AIR FORCE BASE
 LIMESTONE, MAINE

0 400 800 1600 FEET

SCALE: 1" = 800'

SECTION 2

Because of the presence of chlorinated solvent contamination, the FJETC site will continue in the CERCLA process and will be addressed in a future Proposed Plan and ROD. Therefore, the FJETC site will not be discussed further in this ROD.

BXSS. The BXSS occupied approximately 1.5 acres at the intersection of Texas and Cupp Roads. A drainage ditch and forested wetland west of the BXSS receive surface runoff from the site. Only leaded and unleaded gasoline were dispensed at the BXSS, but USTs there were also used to store heating oil and waste oil. In 1991, the tanks were replaced and in 1994, all tanks were emptied and preserved for possible reuse (CDM, 1996). Spills and leaks from the USTs resulted in petroleum-contaminated surface and subsurface soil in the area on the west side of the BXSS (the BXSS source area). As a result, in 1992, a bioventing pilot study was started at the BXSS source area.

A Consensus Statement, signed by the USAF, USEPA, and MEDEP Remedial Project Managers in May 1995, removed the BXSS source area from the FFA and the CERCLA process because petroleum-related contamination is not regulated under CERCLA.

The bioventing system at the BXSS source area was expanded in 1996 to encompass a larger area to allow more complete remediation of the site. The system will continue to operate at the site, until site-specific remediation goals are met. In accordance with the May 1995 Consensus Statement, this contamination will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities and MEDEP Procedural Guidelines for Establishing standards for the Remediation of Contaminated Soil and Groundwater).

The RI identified fuel-related contamination (i.e., TPH and lead) in drainage ditch sediment and soil in the forested wetlands adjacent to the BXSS (CDM, 1996). A Removal Action Memorandum proposed remediation of ditch sediment and soil by excavation and disposal at LF-3 (HAZWRAP, 1997). Risk-based remediation goals were met by excavating and disposing 1,534 cy of contaminated soil and sediment. Confirmation sample concentrations were below remediation goals for TPH and lead. The ditch was backfilled with 215 cy of soil to provide stability to the steep bank adjacent to the wetland (Bechtel, 1998a). Impacts to the wetlands from excavation activities will be mitigated in accordance with the Mitigation Process Plan for the Wetlands Management Program (ABB Environmental Services [ABB-ES], 1995).

No Further CERCLA Action is necessary for the BXSS site because: (1) the bioventing system will continue to operate to remediate the petroleum-contaminated soil at the BXSS source area in accordance with the applicable state requirements, and (2) the 1997 removal action for the drainage ditch soil and sediment achieved the remediation goals established for the site.

2.1.3 Operable Unit 10

OU 10 is located along the North Flightline and consists of PH 8210 site, PH 8270 site, the FSSB site, and the Entomology Shop site (Figure 2-3). These sites were investigated during an RI (ABB-ES, 1994) and addressed in an EE/CA (URS, 1995a).

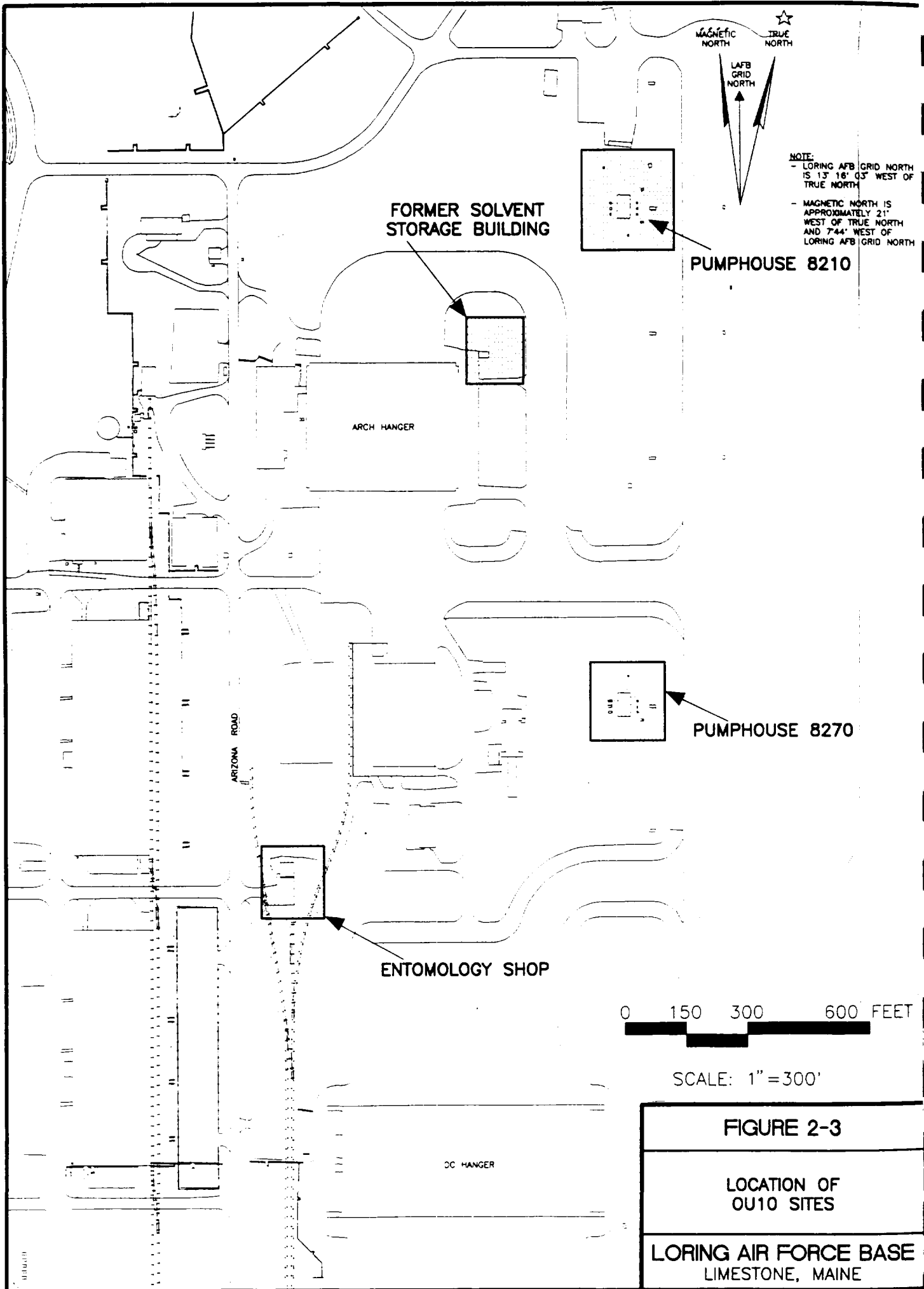
PH 8210 and PH 8270. The PH 8210 and PH 8270 sites, located near the Arch Hangar, were used from the early 1950s through 1963 for fueling and defueling aircraft. In 1992, both pumphouses were demolished and all USTs, valve pits, and piping were removed. The RI identified fuel-related contaminants and localized areas of polychlorinated biphenyls (PCBs) in soil (ABB-ES, 1994). In 1992, PCB-contaminated soil was removed from an area north of PH 8210 and an EE/CA was prepared for the PH 8210 and PH 8270 sites recommending excavation and disposal of fuel-contaminated soil in LF-3 (URS, 1995a).

In 1997, approximately 9,775 cy and 2,336 cy of soil contaminated with jet fuel was removed from the areas near PH 8210 and PH 8270, respectively. Additional soil was excavated during pipeline removal activities. The excavated soil was disposed of in LF-3. Confirmation sampling indicated concentrations of TPH exceeding remediation goals in one area near PH 8210 and one area near PH 8270; however, the exceedances were located at or below 10 feet below ground surface (bgs), the maximum depth used during risk calculations.

Confirmation sampling also identified concentrations of two SVOCs exceeding remediation goals near the pumphouses. Remediation goals for these compounds were based on their potential to leach to groundwater rather than human health or ecological risk-based values. The concentrations remaining in the soil at the site do not pose an unacceptable risk to human health or ecological receptors, and although the concentrations exceed the leaching-based remediation goal, the organic leaching model (OLM) tends to be conservative for these compounds and review of available data for groundwater underlying the PH 8210 and PH 8270 sites revealed no detections for these compounds.

Based on the location of TPH exceedances at or below 10 feet bgs and the fact that the concentrations of SVOCs remaining in source area soil do not pose an unacceptable risk to human or ecological receptors, No Further Action is necessary for source area soil at the PH 8210 and PH 8270 sites.

FSSB. The FSSB was located near the northeast corner of the Arch Hangar and was used to store paint thinner and solvents for aircraft maintenance. The RI identified solvent- and fuel-related contaminants in soil (ABB-ES, 1994). An EE/CA prepared for this site recommended



excavation of the contaminated soil and disposal in LF-3 (URS, 1995a). During removal activities in 1995, approximately 417 cy of contaminated soil were excavated from the FSSB site and disposed of in LF-3. Confirmation samples showed concentrations below the risk-based remediation goals with the exception of one sample. The area from which this sample was taken was excavated in 1996. Following excavation, confirmation sampling showed concentrations of contaminants below remediation goals (Bechtel, 1997a). Therefore, No Further Action is necessary for the FSSB site.

Entomology Shop. The Entomology Shop site is in the central portion of the Flightline Area. The site was originally used as a treatment facility for wastewater from the Engine Build-up Shop and the Arch and DC Hangars. In the early 1970s, the building was converted for the mixing and storage of pesticides and herbicides. In 1992, pesticide operations were moved and the building has been vacant since that time.

The RI identified fuel-, solvent-, and PCB-related contaminants in soil (ABB-ES, 1994). An EE/CA prepared for this site recommended a combination of bioventing and excavation of contaminated soil with disposal in LF-3 (URS, 1995a). Excavation activities were conducted at the Entomology Shop site during the 1995 and 1996 construction seasons. Confirmation samples collected following excavation indicated contaminant concentrations were below the risk-based remediation goals (Bechtel, 1996 and 1997a). The bioventing system continues to operate at the Entomology Shop site. Therefore, this site will be addressed in a future Proposed Plan and ROD, and will not be discussed further in this ROD.

2.1.4 Operable Unit 11

Five sites are located within OU 11: the Fuels Tank Farm (FTF) site, the RMSA site, the VMB site, the Coal Storage Pile/Fly Ash Disposal Area (CSP/FAD) site, and the Base Laundry site (Figure 2-4). An RI (ABB-ES, 1996a) investigated contamination at the five OU 11 sites.

FTF. The FTF site occupies approximately five acres south of the Flightline Area. The FTF was constructed in the early 1950s for the storage of bulk fuels. An EE/CA (URS, 1995a), proposing excavation of lead-contaminated soil and bioventing and product recovery to address jet-fuel contamination, initiated a 1995 removal action. The FTF site was included in the OUs 9 and 11 ROD (ABB-ES, 1996c) signed in September 1996. Because the lead-contaminated soil was removed and only fuel-contaminated soil and fuel product remains at the site, the OUs 9 and 11 ROD determined that No Further CERCLA Action is necessary for the FTF site. Therefore, the FTF site will not be discussed further in this ROD.

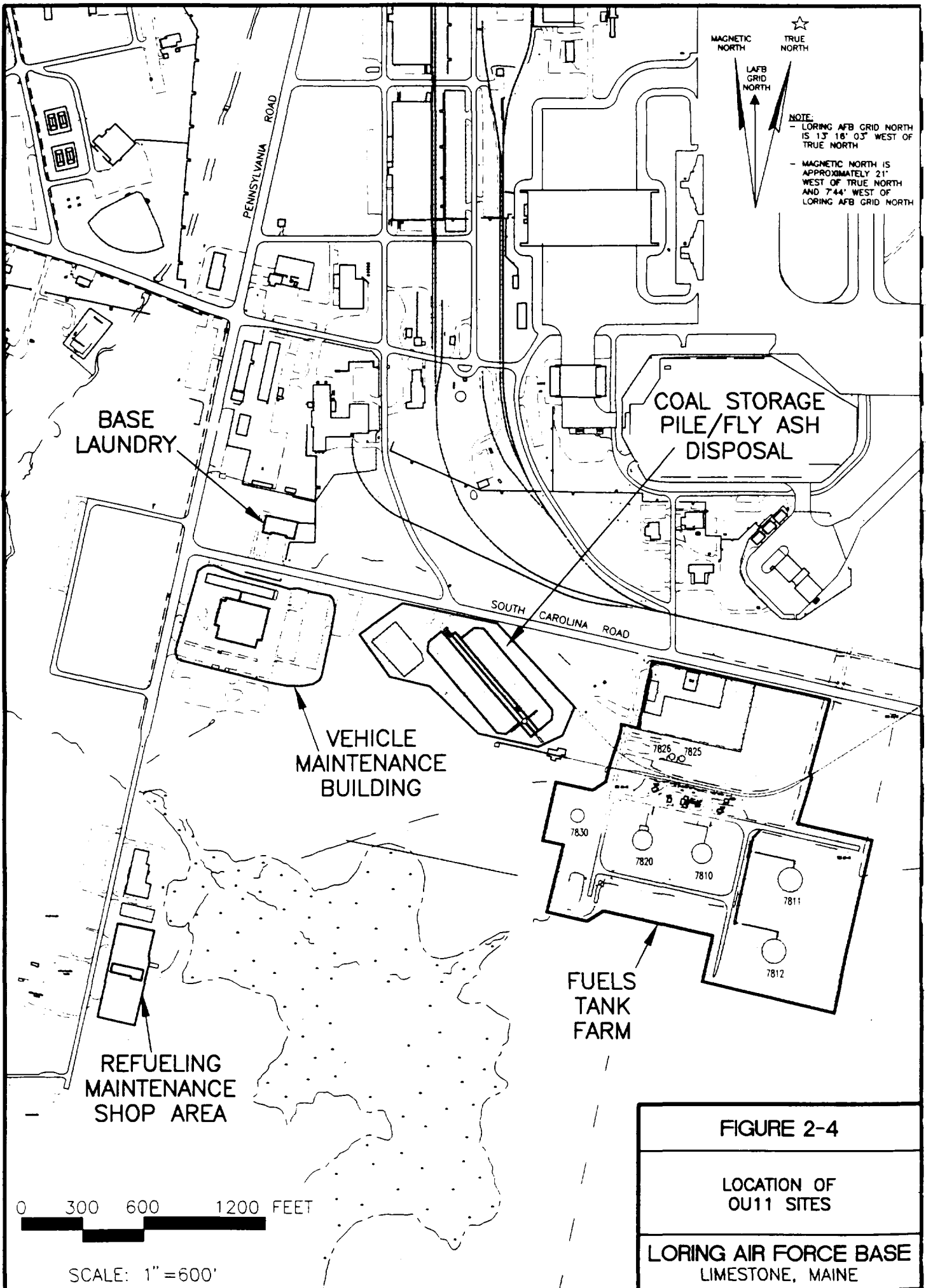


FIGURE 2-4

**LOCATION OF
OU11 SITES**

**LORING AIR FORCE BASE
LIMESTONE, MAINE**

RMSA. The RMSA site consists of one building and a parking area located on the southwest side of the base, on the eastern side of Pennsylvania Avenue. The building has several garage bays for maintenance operations and was used as a maintenance site for large fuel trucks. Various types of maintenance services were completed on the trucks within the building. Floor drains within each bay collected fluids from maintenance procedures and rinse water from washing procedures. The drains exited into an oil interceptor, then into a dry well. The dry well was replaced with an oil/water separator in the late 1980s. In 1992, the effluent from the oil/water separator was piped to the sanitary sewer and the oil was piped to a UST located north of the separator. Diesel fuel-contamination (i.e., SVOCs and inorganics), PCBs, and tetrachloroethene (PCE) were identified in site soil during the RI (ABB-ES, 1996a). An EE/CA prepared for this site recommended excavation and disposal of contaminated soil in LF-3 (URS, 1995a).

In 1995, 5,030 cy of soil were excavated and disposed of in LF-3. Confirmation sampling indicated concentrations of contaminants below the site-specific, risk-based, remediation goals with the exception of two exceedances of TPH; one localized area east of the building and one location beneath the footing of the building foundation (Bechtel, 1996). Based on the TPH contamination remaining at the RMSA site, a residual risk evaluation was performed. Results of the evaluation indicated no further action was warranted for the soil contamination beneath the foundation since the contamination will not pose an unacceptable risk under CERCLA to human health and ecological receptors (AFBCA, 1998). The residual petroleum contamination remaining in the localized area east of the building will be further evaluated in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater). Therefore, No Further CERCLA Action is necessary for the RMSA site.

VMB. The VMB site is on the northwestern corner of OU 11, southeast of the intersection of Pennsylvania and South Carolina Roads. The site occupies approximately 15 acres and includes two buildings, that were used for vehicle parking and maintenance of USAF vehicles. Wastes generated at the facility included waste oil, anitfreeze, solvents, Speedi-Dry, and battery electrolyte.

From 1954 until the 1970s, waste fluids were combined, placed in drums, and stored at the facility. The drums were periodically sent to the DRMO for disposal. After that time, until 1984, waste fluids were stored in a 500-gallon tank at the site, then transferred to the DRMO. The 500-gallon tank was removed in 1984. From 1984 until 1989, waste oil was stored in a UST that had previously been used for the storage of diesel fuel. Two other USTs, which had been used for automobile fuel, were removed in 1990, and the waste oil UST was removed in 1992. From 1989

SECTION 2

until 1992, all waste fluids were drummed and disposed of through the DRMO. In 1992, a waste oil burner was installed in the VMB, and waste fluids were incinerated for the remainder of operations at this facility in accordance with State of Maine Waste Oil Management Rules (ABB-ES, 1996a).

The OU 11 RI identified fuel contaminants in shallow soil west of the buildings, in the area of the former USTs, and fuels and PCBs in the drainage ditches east and south of the buildings. Fuels, including TPH, were identified as contaminants at the oil/water separator (OWS) and the associated grease trap. Additionally, chlorinated solvents were identified as contaminants in a localized "hot spot" area at the southeastern corner of the upper parking lot (ABB-ES, 1996a).

An EE/CA prepared for this site proposed excavation of the drainage ditch contamination and bioventing of the soil west of the buildings (URS, 1995a). Another EE/CA proposed ex-situ soil vapor extraction (SVE) for the soil excavated from the "hot spot" area and contaminated with chlorinated solvents (URS, 1996a).

Drainage ditches. In 1995, approximately 4,960 cy of soil from ditches at the VMB site were excavated and disposed of in LF-3. Following excavation, two confirmation samples exceeded the site-specific, risk-based remediation goals. The contaminants were benzo(a)pyrene at one location and Aroclor-1260 at the other location. A residual risk evaluation determined the concentrations do not pose an unacceptable risk under CERCLA to human health or ecological receptors (Bechtel, 1996).

Former UST area. The bioventing system was installed in 1995 to address fuel-related contamination in shallow soil west of the buildings in the area of the former USTs. Due to the limited effectiveness of the bioventing system, a soil removal action and subsequent decommissioning of the bioventing system are scheduled for 1998. Because the contamination in this area is fuel-related, it is not regulated under CERCLA.

Grease trap. In 1996, the grease trap associated with the OWS at the VMB site, and soil associated with the grease trap, were excavated and disposed of in LF-3. Existing drainlines were plugged or rerouted to prevent further release of contaminants. Confirmation sampling indicated exceedances of the site-specific, risk-based remediation goals at five locations: one for chlorinated solvents, one for PCBs, and three for TPH (Bechtel, 1997a). Based on the soil contamination remaining at the VMB grease trap, a residual risk evaluation was performed (AFBCA, 1998). Based on the OLM, the evaluation concluded that although the resulting PCE concentration in groundwater exceeds the MEG, because of the conservative nature of the model, small area of residual contamination, and the current contaminated conditions of the aquifer, additional adverse

groundwater impacts are not expected. The evaluation also concluded that the residual PCB contamination does not pose an unacceptable risk to human health or ecological receptors. The remaining fuel-related contamination, which is not regulated under CERCLA, will be further evaluated in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater).

OWS. The OWS and an estimated 293 cy of associated soil were removed from the VMB site during the 1997 construction season. Excavated soil was disposed of in LF-3. Confirmation sampling indicated concentrations of contaminants below the site-specific, risk-based remediation goals with the exception of two exceedances of TPH (Bechtel, 1998b). A residual risk evaluation determined these exceedances do not pose an unacceptable risk under CERCLA to human health or ecological receptors.

“Hot spot” Removal actions were conducted at the "hot spot" area at the VMB site in 1996 and 1997. Approximately 80 cy of soil contaminated with chlorinated solvents were excavated in 1996, transported to the Base Laundry site, and treated ex-situ with the SVE system at that site. Following this 1996 excavation, confirmation sampling showed a location southeast of the "hot spot" still above the site-specific, risk-based remediation goals for chlorinated solvents. In 1997, approximately 81 cy of additional soil were excavated from the "hot spot" and transported to the Base Laundry for treatment with the ex-situ SVE system. Subsequent confirmation sampling indicated concentrations of contaminants below the site-specific, risk-based remediation goals, providing protection to human health and ecological receptors (Bechtel, 1997a and 1998b).

In summary, No Further CERCLA Action is necessary for soil at the VMB site. Contamination has been removed from the VMB source area soil or is fuel-related and therefore not regulated under CERCLA. Additionally, the remaining contamination does not pose an unacceptable risk under CERCLA to human health or ecological receptors and will not cause an exceedance of groundwater criteria (i.e., MCLs and MEGs). The remaining petroleum contamination at the site will be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater).

CSP/FAD. The CSP/FAD sites are south of the Flightline Area and west of the FTF. The CSP/FAD sites were included in the OUs 9 and 11 ROD (ABB-ES, 1996c) signed in September 1996. A cover was constructed over the FAD in 1994 and additional closure activities are being conducted to comply with State of Maine regulations. Additionally, the storage of coal is not regulated by CERCLA. As a result, the OUs 9 and 11 ROD determined that No Further CERCLA Action is necessary for the CSP/FAD sites. Therefore, the CSP/FAD sites will not be discussed further in this ROD.

SECTION 2

Base Laundry. Building 7230, north of the VMB site, was used as a bakery until 1970, when it was converted to the Base Laundry. Laundry operations included dry cleaning using PCE. The RI reported detections of chlorinated solvents in soil, especially PCE (ABB-ES, 1996a). An EE/CA proposed in-situ SVE for the localized area of soil contamination at the northeast corner of the building (URS, 1996a). The SVE system was installed in 1996 and is continuing to operate at the site. Because chlorinated solvents are present at the site, the Base Laundry will continue in the CERCLA process and will be addressed in a future Proposed Plan and ROD. Therefore, the Base Laundry will not be discussed further in this ROD.

2.2 RESPONSE ACTIVITIES

The response activities for OUs 3, 5, 10, and 11 are summarized as follows:

- In 1984, a PA was completed detailing historical material usage and waste disposal practices at LAFB (CH₂M Hill, 1984).
- The RI process commenced in 1988 and continued into 1995 (ABB-ES, 1994; ABB-ES, 1996a; CDM, 1996; Law, 1996a; URS, 1998).
- LAFB was added to the NPL in February 1990.
- The USAF entered into an FFA in 1991 with the USEPA and MEDEP regarding the cleanup of environmental contamination at LAFB (FFA, 1991). The FFA was revised in December 1993 to address base closure related issues, such as real estate property transfer and a revised schedule. The FFA was modified in January 1995 to allow the Remedial Project Managers to make minor modifications to the FFA, such as schedule adjustments or removal of petroleum-contaminated sites from the agreement.
- In 1993, a PA/SI was completed for the 17 OU 3 Debris Disposal sites (Law, 1994).
- Based on the results of the OU 3 PA/SI, an RI/ASI was completed in 1994 and 1995 for 11 of the 17 OU 3 sites (Law, 1996).
- A Consensus Statement (AFBCA, 1995) was signed by the USAF, USEPA, and MEDEP in May 1995 removing the BXSS source area from the FFA and the CERCLA process because the petroleum contamination present at the site is not regulated under CERCLA.

- An EE/CA (URS, 1995a) was completed for OUs 5, 8, 9, 10, and 11 to determine removal actions for the various sites in those OUs based on information presented in the RI reports.
- An Action Memorandum was completed to document the decision to perform non-time-critical removal actions for selected sites within OUs 5, 8, 9, 10, and 11 (URS, 1995b).
- An EE/CA was completed for OU 11 to determine removal actions for the VMB site and the Base Laundry site (URS, 1996a).
- An Action Memorandum was completed to document the decision to perform non-time-critical removal actions for selected sites within OU 11 (URS, 1996b).
- A Feasibility Study (Law, 1996b) was completed in 1996 for OU 3 to determine remedial alternatives for remediation of contamination based on the information presented in the RI/ASI Technical Report.
- The OU 3 Proposed Plan (Law, 1996c) was submitted for public review in June 1996.
- The OUs 9 and 11 Proposed Plan (ABB-ES, 1996b) was submitted for public review in June 1996.
- The OU 3 ROD was signed in September 1996 (Law, 1996d).
- Based on the OU 3 ROD, a Supplemental RI/ASI was completed in 1996 for the EOD Range site and the Outdoor Firing Range site in OU 3 (URS, 1998).
- The OUs 9 and 11 ROD was signed in September 1996 (ABB-ES, 1996c).
- A Removal Action Memorandum for the BXSS site was completed for removal of contaminated soil and sediment in the drainage ditch adjacent to the BXSS (HAZWRAP, 1997).
- The Proposed Plan for No Further CERCLA Action for Sites Within OUs 3, 5, 10, and 11 (ABB-ES, 1998) was submitted for public review in March 1998.

SECTION 2

Other key activities at LAFB which relate to OUs 3, 5, 10, and 11 are as follows:

- A removal action, part of a base compliance project, was completed at the Outdoor Firing Range site in 1995. This action was documented in the OU 3 ROD (Law, 1996d).
- Removal actions were completed in 1995 at the FSSB site (OU 10) and the VMB and RMSA sites (OU 11). These actions were documented in a Removal Action Report (Bechtel, 1996).
- Removal actions were completed in 1996 at the FSSB site (OU 10), the VMB site (OU 11), and the Contract Storage Shed site (OU 3). These actions were documented in Removal Action Reports (Bechtel, 1997a and 1997b).
- Removal actions were completed in 1997 at the BXSS site (OU 5), VMB site (OU 11), and the PH 8210 and PH 8270 sites (OU 10). These actions are documented in Removal Action Reports (Bechtel, 1998a; Bechtel, 1998b; and JTL, 1998).
- Clearing the EOD Range site of potentially unsafe EOD-related residuals began in 1997 and is scheduled for completion in 1998.

3.0 COMMUNITY PARTICIPATION

Throughout the Site's history, the community has been active and involved in base activities. The USAF and USEPA have kept the community and other interested parties apprised of Site activities through informational meetings, fact sheets, press releases, public meetings, site tours, and open houses, as well as Restoration Advisory Board (RAB) meetings. Membership of the RAB is composed of USAF, USEPA, MEDEP, local officials, and community representatives.

The Site Community Relations Plan (CRP) was released in August 1991 and revised in May 1995. The CRP outlined a program to address community concerns and keep citizens informed and involved during remedial activities. The CRP can be found in the Site Administrative Record.

On June 24, 1992, the USAF made the Site Administrative Record available for public review. The Site Administrative Record is currently available for public review at the AFBCA Office, 5100 Texas Road, Limestone, Maine.

The AFBCA published a notice and brief analysis of the Proposed Plan for No Further CERCLA Action for Sites Within OUs 3, 5, 10, and 11 in the *Bangor Daily News*, the *Aroostook Republican*, the *Star Herald*, and the *Fort Fairfield Review* on March 4, 1998, and made the Proposed Plan available to the public at the AFBCA Office.

From March 9, 1998 through April 7, 1998, the USAF held a 30-day public comment period to accept public input on the Proposed Plan, as well as other documents previously released to the public. On March 19, 1998, AFBCA personnel and a MEDEP representative held a public meeting to discuss the Proposed Plan and to accept any oral comments. A transcript of this meeting is included as Appendix A and the Responsiveness Summary is included as Appendix B. The USAF received no verbal or written comments on the Proposed Plan at the hearing or during the 30 day public comment period.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

This ROD presents the decision that No Further CERCLA Action is necessary for the source areas (i.e., surface and subsurface soils) at the EOD Range site and the Outdoor Firing Range site in OU 3; the BXSS site in OU 5; the PH 8210 site, the PH 8270 site, and the FSSB site in OU 10; and the RMSA site and the VMB site in OU 11.

The USAF and USEPA have determined that No Further CERCLA Action is required for the source areas at these sites because the CERCLA contaminants (1) have been removed to acceptable risk levels; (2) are at concentrations and depths that do not pose an unacceptable risk; or (3) are petroleum-related and are being addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater).

The USAF evaluated the potential risks to human health and the environment at each of these sites and developed the site-specific remediation goals for the source areas at each of these sites based on the future land use determinations made in the Disposal ROD. Therefore, the No Further CERCLA Action decisions for the source areas at each of these sites is based on the assumption that future land use at each site shall be in accordance with the Disposal ROD (i.e., that real property comprising the site shall be parcelled, disposed of, and reused in accordance with the Disposal ROD).

No Further CERCLA Action is necessary for the soil at the EOD Range site in OU 3 because the soil at the site does not pose an unacceptable risk under CERCLA to human health and ecological receptors. The USAF will clear the site of any EOD-related residuals and the site will not be released for reuse until the clearance is approved by the Department of Defense Explosive Safety Board, anticipated in 1999. No Further Action is necessary for the soil at the Outdoor Firing Range site because a previous response at the site eliminated the need to conduct additional remedial action, and the soil at the site does not pose an unacceptable risk under CERCLA to human health and ecological receptors.

No Further CERCLA Action is necessary for the soil at the BXSS site in OU 5. In accordance with a Consensus Statement signed by the USAF, USEPA, and MEDEP in May 1995, petroleum-related soil contamination at the BXSS site will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater). The contaminated soil and sediments in the drainage ditch

SECTION 4

at the BXSS site have been removed and this portion of the site no longer poses an unacceptable risk under CERCLA to human health and ecological receptors. Restoration of the wetland impacted by the excavation activities will be conducted in accordance with the Mitigation Process Plan for the Loring Wetlands Management Program, prepared in accordance with applicable federal and state regulations and approved by the USEPA and MEDEP in 1995. The No Further CERCLA Action decision for the BXSS site does not constitute a finding by the USEPA that adequate protection has been achieved at the site.

No Further Action is necessary for the soil at the PH 8210 site, the PH 8270 site, and the FSSB Site in OU 10 because the removal actions conducted at these sites between 1995 and 1997 have removed the contamination sources and the remaining soil at the sites does not pose an unacceptable risk to human health and ecological receptors.

No Further CERCLA Action is necessary at the RMSA site and the VMB site in OU 11 because CERCLA contaminants have been removed or are at concentrations and depths that do not pose an unacceptable risk under CERCLA, to human health and ecological receptors. The petroleum-related soil contamination remaining at these sites is not regulated under CERCLA. This petroleum-related contamination will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater). The No Further CERCLA Action decision for the RMSA site and VMB site does not constitute a finding by the USEPA that adequate protection has been achieved at these sites.

Although the USAF and USEPA, with concurrence of the MEDEP, have determined that No Further CERCLA Action is necessary for the source areas at the sites referenced above, further CERCLA action may be required to address other media (i.e., groundwater and surface water) at these sites. The groundwater and surface water associated with the sites shall be addressed in OU 12 and OU 13, respectively.

The USEPA has the authority to reopen or amend the No Further CERCLA Action decisions presented in this decision document even if all or part of the Site is deleted from the NPL. The USEPA may exercise such authority at any of the sites referenced above in circumstances including, but not limited to, (1) if, in the future, conditions at the site indicate that an unacceptable risk to human health or the environment may result from exposure to contaminants at the site, or (2) if there is a change in land use at the site from the reuse determined in the Disposal ROD for the real property comprising the site. The USAF shall, in consultation with the USEPA and MEDEP, consider the imposition of proper institutional controls to restrict the future land uses of the sites and assure proper notification of future owners. The USAF is prepared to

initiate such controls where it, the USEPA, and MEDEP determine that such controls would be appropriate.

The site-specific remediation goals developed for the source areas at each of the sites referenced above are based on the future land use determinations made in the Disposal ROD. Since these remediation goals will not allow for unrestricted use and unlimited exposure, the USAF will conduct five-year site reviews at each site in accordance with CERCLA Section 121 and the NCP. The USAF will continue such five-year site reviews for each site until the levels of contaminants remaining at the site allow for unrestricted use and unlimited exposure.

5.0 SUMMARY OF SITE CHARACTERISTICS AND RISKS

Site investigations were conducted from 1985 through 1995 to characterize the nature and distribution of contaminants at OUs 3, 5, 10, and 11. A baseline risk assessment (RA) was performed for each site as part of the RI. Detailed descriptions of the data and RAs are presented in the Final RI Reports for each OU (ABB-ES, 1994 and 1996a; CDM, 1996; Law, 1996a; URS, 1998).

The RI reports included recommendations for further actions at sites where the RA concluded that there was an unacceptable risk to human health or the environment. The USAF proposed to conduct removal actions for the source areas (i.e., surface and subsurface soils) at these sites to address the risks identified during the RI. In support of these removal actions, the USAF prepared a Removal Action Memorandum for the BXSS drainage ditch (HAZWRAP 1997) and EE/CAs for the sites in OUs 10 and 11 (URS 1995a and 1996a). As a result of these documents, removal actions were completed at sites within these OUs between 1995 and 1997.

As part of the removal actions, confirmation soil samples were collected and analyzed to verify that the established site-specific risk-based remediation goals were achieved. For sites where the remediation goals were not met, a residual risk evaluation was conducted to assist in determining whether or not further action was warranted.

Subsection 5.1 summarizes the RA approach used during the RI. The remaining subsections discuss the significant findings regarding the source area (i.e., surface and subsurface soil) contamination for each site addressed by this ROD. Groundwater contamination associated with these sites is addressed as part of OU 12, the basewide groundwater OU, and is not discussed in this ROD.

5.1 BASELINE RISK ASSESSMENT

An RA was conducted as part of the RI for each of the sites addressed by this ROD. The baseline RAs were performed to estimate the probability and magnitude of potential adverse human health and environmental effects from exposure to contaminants associated with surface and subsurface soils at the sites. Each baseline RA was conducted in accordance with USEPA and MEDEP risk assessment guidance documents and the LAFB Risk Assessment Methodology (HAZWRAP, 1994).

SECTION 5

5.1.1 Human Health Risk Assessment

The human health RAs followed a four step process:

- contaminant identification, which identified those hazardous substances that, given the specifics of the site, were of significant concern;
- exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure;
- toxicity assessment, which considered the types and magnitude of adverse health effects associated with exposure to hazardous substances; and
- risk characterization, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the site, including carcinogenic and noncarcinogenic risks.

The contaminants of concern (COCs) identified in the first step of the RA process constitute a representative subset of the compounds detected at each site during RI activities. The COCs were selected to represent potential site-related hazards based on toxicity, concentration, frequency of detection, and mobility and persistence in the environment.

Potential human health effects associated with exposure to the COCs at each site were estimated quantitatively through the development of hypothetical exposure pathways. These pathways were developed to reflect the present uses, potential future uses, and location of each site. For each pathway, an average (i.e., mean) and a reasonable maximum exposure (RME) risk was calculated corresponding to exposure to the average and maximum concentration detected.

Excess lifetime cancer risks were determined for each exposure pathway by multiplying the exposure level by the chemical-specific cancer slope factor. Cancer slope factors have been developed by USEPA from epidemiological or animal studies to reflect a conservative "upper bound" of the risk posed by potentially carcinogenic compounds. That is, the true risk is unlikely to be greater than the predicted risk. The resulting risk estimates are expressed in scientific notation as a probability (e.g., 1×10^{-6} for 1/1,000,000) and indicate (using this example) that an individual has a one-in-a-million chance of developing cancer as a result of site-related exposure over 70 years to the particular compound at the stated concentration. Current USEPA practice considers carcinogenic risks to be additive when assessing exposure to a mixture of hazardous substances.

The Hazard Quotient (HQ) was also calculated for each pathway as USEPA's measure of the potential for noncarcinogenic health effects. The HQ is calculated by dividing the exposure level by the reference dose (RfD) or other suitable benchmark for noncarcinogenic health effects. RfDs have been developed by USEPA to protect sensitive individuals over the course of a lifetime, and reflect a daily exposure level that is likely to be without an appreciable risk of an adverse health effect. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that adverse health effects will not occur. The HQ is often expressed as a single value (e.g., 0.3) indicating the ratio of the stated exposure to the RfD value (in this example, the exposure is approximately one-third of an acceptable exposure level for the given compound). HQs are summed, resulting in a Hazard Index (HI) for each pathway. If the HI is greater than 1, the predicted intake could potentially cause adverse health effects. This determination is necessarily imprecise because the derivation of dose-response values (i.e., RfDs) involves the use of multiple safety and uncertainty factors. In addition, the HQs for individual compounds should be summed only if their target organs or mechanisms of action are identical. Therefore, the potential for adverse effects from a mixture having an HI in excess of 1 must be assessed on a case-by-case basis.

Carcinogenic risks are compared to the USEPA target carcinogenic risk range of one in ten thousand to one in a million (1×10^{-4} to 1×10^{-6}) and the MEDEP cancer risk guidance value of 1×10^{-5} . Noncarcinogenic risks are compared to the USEPA target noncarcinogenic hazard index (HI) of 1.

USEPA has a CERCLA mandate to manage risk resulting from actual or potential exposure to hazardous substances. Carcinogenic risk within the USEPA's target cancer risk range is considered acceptable. Noncarcinogenic risks with HIs below 1 are also considered acceptable. USEPA's decision as to whether action is warranted when the cancer risk range is not exceeded is based upon site-specific conditions.

5.1.2 Ecological Risk Assessment

An ecological RA was performed at each site for terrestrial animals and plant life (phytotoxicity). Risks for ecological receptors were evaluated for exposures to contaminated surface soil, ingestion of contaminated food items, inhalation of contaminants from surface soil, dermal contact with surface soil, and root uptake (plants only). Exposure pathways were not identified for subsurface soil because terrestrial organisms are not expected to come in contact with soil deeper than two feet below grade, and few prey items exist in subsurface soils.

Concentrations of chemicals in surface soil were compared to chemical-specific, receptor-specific ecological toxicity benchmark values to derive HQs. The HQs for each pathway were summed to yield a total HI for each receptor based on exposure to mean (average case) and maximum concentrations (worst case).

SECTION 5

5.2 OPERABLE UNIT 3

Two sites in OU 3 are recommended for No Further CERCLA Action. These sites are the EOD Range site and the Outdoor Firing Range site. A complete discussion of site characteristics can be found in the OU 3 PA/SI Technical Report (Law, 1994), the OU 3 RI/ASI Technical Report (Law, 1996a), and the OU 3 Supplemental RI/ASI Technical Report (URS, 1998).

5.2.1 EOD Range

The EOD Range site consists of two areas that total approximately 65 acres: a previously investigated southern area and an abandoned northern area. The site was previously used for disposal of ammunition by detonation and burning, and for burial of munitions residue, spent cartridges, and construction debris. In 1993, a PA/SI (Law, 1994) was conducted at the EOD Range. For purposes of the investigation, the EOD Range was subdivided into the following areas: the Residue Disposal Pit, the Burn Kettle Area, the North Disposal Area, the Munitions Burial site, the North Disposal Pit, and the Cylinder Disposal Areas. Based on the detections of inorganics, nitrogen compounds, and explosives in site soils during the PA/SI, an RI/ASI (Law, 1996a) was then completed, as well as a supplemental investigation (URS, 1998) to provide further site characterization. These investigations detected relatively low concentrations of VOCs, SVOCs, inorganic compounds, and explosive-related compounds.

The primary contaminants detected in soils were toluene, bis(2-ethylhexyl)phthalate (BEHP), benzoic acid, and benzyl alcohol. Toluene was generally detected at concentrations of less than 2 micrograms per kilogram ($\mu\text{g}/\text{kg}$). BEHP was detected in nearly all samples, ranging in concentrations from 21 to 220 $\mu\text{g}/\text{kg}$. Benzoic acid was detected at concentrations ranging from 28 to 670 $\mu\text{g}/\text{kg}$, with most detections less than 300 $\mu\text{g}/\text{kg}$. Benzyl alcohol was only detected in one sample at 26 $\mu\text{g}/\text{kg}$.

Pesticides were detected in nearly all soil samples at concentrations consistent with established Site background. The pesticides detected were Delta-BHC, Aldrin, Heptachlor Epoxide, Endosulfan I, Dieldrin, 4,4'-DDE, Endrin, Endosulfan II, 4,4'-DDD, and 4,4'-DDT. Several inorganics were detected in soils exceeding the Site background levels. These included antimony, barium, cadmium, cobalt, iron, magnesium, nickel, selenium, sodium, and zinc.

The human health RA conducted as part of the RI/ASI concluded that the carcinogenic risk for the groundskeeper at the site, based on the RME and anticipated future land use as a natural resource conservation area, ranged from 3E-06 (North Disposal Pit) to 3E-09 (North Disposal Area). The reported values are within or below the USEPA carcinogenic risk range of 1E-04 to

1E-06 and below the MEDEP cancer risk guidance value of 1E-05. The noncarcinogenic risk for the site ranged from 0.003 (Burn Kettle Area) to 1 (Munitions Burial site). The reported values are less than or equal to an HI of 1.

The ecological risk assessment conducted as part of the RI/ASI concluded that HIs for the receptors evaluated, based on maximum concentrations, ranged from 0.088 to 9.3. The contaminants contributing the greatest amount of risk included aluminum and phosphorus. Although aluminum was a primary risk contributor, the maximum concentration detected did not exceed the established Site background levels. Phosphorus was detected in only one of 32 samples collected. For purposes of the RA, the phosphorus was assumed to be white phosphorus. Because oxidation and hydrolysis are major transformation processes, white phosphorus readily degrades in aerobic surface soils; therefore, it is likely that the phosphorus was phosphoric acid or some other degradation product. The RI/ASI concluded that given the infrequency of detection and aerobic degradation potential, ecological exposure to white phosphorus is considered limited, thus adverse effects are limited.

Based on the results of the RI/ASI and the Supplemental RI/ASI Technical Report, soil at the EOD Range site does not pose an unacceptable risk under CERCLA to human health and ecological receptors. However, to prepare the site for reuse as a natural resource conservation area and to mitigate potential physical hazards at the site, the range should be cleared of any potential unsafe EOD-related residuals (URS, 1998). Clearing of ordnance from this site, which is being conducted independent of the RI program, began in the fall of 1997 and is scheduled for completion in 1998. The USAF will not release the site for reuse until the clearance is approved by the Department of Defense Explosive Safety Board, anticipated in 1999.

Because the RI/ASI and Supplemental RI/ASI determined there is no unacceptable risk under CERCLA to human health and ecological receptors at the EOD Range, and clearing the site of any potential unsafe EOD-related residuals is being conducted to mitigate any potential physical hazards and prepare the site for reuse as a natural resource conservation area, No Further CERCLA Action is necessary for the EOD Range site.

5.2.2 Outdoor Firing Range

The Outdoor Firing Range site consists of a small arms firing line, a skeet range, a grenade range, and a debris area. In 1993, a PA/SI (Law, 1994) was conducted at the Outdoor Firing Range site, followed by an RI/ASI.

The human health RA conducted as part of the RI/ASI concluded that the carcinogenic risk for the groundskeeper at the site, based on the RME and anticipated future land use as a natural resource conservation area, ranged from 5E-05 (Debris Area) to 1E-09 (Skeet Range). The

SECTION 5

reported values are within or below the USEPA carcinogenic risk range of 1E-04 to 1E-06 and below the MEDEP cancer risk guidance value of 1E-05, with the exception of the Debris Area (5E-05). The noncarcinogenic risk for the site ranged from 0.00005 (Grenade Range) to 0.9 (Debris Area). The reported values are less than an HI of 1.

The ecological risk assessment conducted as part of the RI/ASI concluded that HIs for the receptors evaluated were less than 1. Based on the maximum concentrations detected, the HIs ranged from 0.028 to 0.88.

Based on the analytical results and risk assessment, the RI/ASI concluded that there is no unacceptable risk to human health or ecological receptors at the Outdoor Firing Range site.

In 1995, approximately 600 cy of soil containing lead bullets from the firing line backstop was excavated as part of a base compliance project. These soils were stabilized and disposed of off-base at an appropriate, permitted landfill. During the removal action, soil samples collected from behind the firing range were found to contain elevated levels of lead. Based on these results, further investigation was recommended to verify the extent of the contamination at the site (Law, 1996d).

Surface soil samples collected during the supplemental investigations in 1996 detected lead above the established Site background level of 22.6 milligrams per kilogram (mg/kg). Lead concentrations in soil samples collected from behind (i.e., west of) the firing line ranged from 16.5 to 543 mg/kg. Lead was detected at concentrations ranging from 11.3 to 2,910 mg/kg in samples collected in front (i.e., east) of the firing line.

The risk assessment, conducted as part of the supplemental investigation, concluded that the average lead concentration (1,651 mg/kg) remaining in soil at the site is less than the risk-based lead screening level of 2,016 mg/kg. Therefore, the soil at the site does not pose an unacceptable risk to human health. The risk assessment also concluded that there is some potential for adverse effects on ecological receptors; however, the small size of the affected area, approximately one-third acre, limits the impact of any such effects (URS, 1998).

Based on the findings of the supplemental investigations, the risk assessment, and the intended reuse of the site as a small arms firing range by the Maine Army National Guard, No Further Action is necessary for the Outdoor Firing Range site.

5.3 OPERABLE UNIT 5

One site in OU 5 is being considered for No Further CERCLA Action, the BXSS site. A complete discussion of site characteristics can be found in the OU 5 RI Report (CDM, 1996).

The BXSS, built in 1955, occupied approximately 1.5 acres at the intersection of Texas and Cupp Roads. A drainage ditch and forested wetland west of the BXSS receive surface runoff from the BXSS. Leaded and unleaded gasoline were dispensed at the BXSS until it was decommissioned in 1994. Spills and leaks from the USTs at the BXSS resulted in petroleum-contaminated surface and subsurface soil in the area on the west side of the BXSS (the BXSS source area). As a result, in 1992, a bioventing pilot study was started at the BXSS source area.

A Consensus Statement, signed by the USAF, USEPA, and MEDEP Remedial Project Managers in May 1995, removed the BXSS source area from the FFA and the CERCLA process because petroleum-related contamination is not regulated under CERCLA. In accordance with the May 1995 Consensus Statement, this contamination will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater).

In 1996, the bioventing system was expanded to encompass a larger area to allow more complete remediation of the petroleum-contaminated soil at the site. The bioventing system will continue to operate at the site until the site-specific remediation goals are met and the petroleum-contaminated soil will continue to be addressed in accordance with the applicable state requirements referenced above.

Petroleum releases at the BXSS have resulted in contaminated surface soils in the drainage ditch west of the BXSS. The primary contaminants of concern are lead and TPH. Lead was detected at concentrations ranging from 50 to 1,350 mg/kg. Concentrations of TPH ranged from 126 to 225,421 mg/kg (HAZWRAP, 1997).

The human health RA conducted as part of the RI concluded that the carcinogenic risk for the commercial/industrial worker, based on the RME and anticipated future commercial/industrial use of the site, was $7E-06$. The estimated risk is within the USEPA carcinogenic risk range of $1E-04$ to $1E-06$ and below the MEDEP cancer risk guidance value of $1E-05$. The noncarcinogenic risk for the site, based on the RME and anticipated future land use, resulted in an HI of 1.8, which slightly exceeds the guidance value of 1.

SECTION 5

The ecological risk assessment conducted as part of the RI concluded that there were potential risks to ecological receptors. Based on the maximum concentrations detected, HIs up to 24 were reported.

A Removal Action Memorandum was prepared recommending excavation and disposal of contaminated soil and sediment in the drainage ditch (HAZWRAP, 1997). Risk-based remediation goals were established to provide guidelines on the level of contamination that is protective of human health and ecological receptors. The Removal Action Memorandum included remediation goals for lead (155 mg/kg) and TPH (1,000 mg/kg).

In 1997, approximately 1,534 cy of contaminated soil and sediment were excavated from the drainage ditch, to a depth of approximately 3 feet, and disposed of in LF-3. Following excavation of the drainage ditch, confirmation soil samples were collected. Results of the confirmation sampling indicated that contaminant concentrations were below the established risk-based remediation goals for both lead and TPH, which were established to be protective of human health and ecological receptors.

Following excavation and confirmation sampling, a portion of the drainage ditch was backfilled with approximately 215 cy of soil to provide stability to the steep bank adjacent to the wetland. Adverse effects to the wetland (approximately 0.22 acres) from excavation activities will be mitigated in accordance with the Mitigation Process Plan for the Loring Wetlands Management Program (ABB-ES, 1995).

No Further CERCLA Action is necessary for the BXSS site because: (1) the bioventing system will continue to operate to remediate the petroleum-contaminated soil at the BXSS source area in accordance with applicable state requirements, and (2) the site-specific, risk-based remediation goals were achieved as a result of the 1997 removal action for the BXSS drainage ditch and only wetland mitigation activities remain to be completed.

5.4 OPERABLE UNIT 10

Three sites in OU 10 are recommended for No Further Action. These sites are the PH 8210 site, the PH 8270 site, and the FSSB site. A complete discussion of site characteristics can be found in the OU 10 RI Report (ABB-ES, 1994).

5.4.1 PH 8210

The PH 8210 site, located near the Arch Hangar, was used from the early 1950s through 1963 for fueling and defueling aircraft. In 1992, the pumphouse was demolished and all USTs, valve pits, and piping were removed. The RI identified fuel-related contaminants and localized areas of PCBs in soil (ABB-ES, 1994).

Fuel-related SVOCs, mostly polynuclear aromatic hydrocarbons (PAHs), were detected in surface soils at concentrations up to 35 mg/kg. The PCB Aroclor-1260, was detected in one surface soil sample at 1.1 mg/kg. Subsurface soil contamination consisted primarily of PAHs, ranging in concentrations up to 58 mg/kg. Aroclor-1260 was also detected in two subsurface soil samples from the northeast corner of the former pumphouse at 1.4 and 3.7 mg/kg. The highest concentrations of TPH were found near the former storage tanks and pipelines associated with fueling operations.

The human health RA conducted as part of the RI concluded that the carcinogenic risk for the construction worker, based on the RME and anticipated future commercial/industrial use of the site, was $1E-04$. The estimated risk is within the USEPA carcinogenic risk range of $1E-04$ to $1E-06$, but exceeds the MEDEP cancer risk guidance value of $1E-05$. The noncarcinogenic risk for the site, based on the RME and anticipated future land use, resulted in an HI of 1, which is equal to the guidance value of 1.

The ecological risk assessment conducted as part of the RI concluded that there were potential risks to ecological receptors. Based on the maximum concentrations detected, HIs for the receptors evaluated ranged from 0.016 to 23.

An EE/CA for the PH 8210 site recommended excavation and disposal of fuel-contaminated soil. Site-specific, risk-based remediation goals, which also considered the potential contamination to groundwater due to leaching of the contaminants, were developed for PAHs, PCBs (Aroclor-1260), and TPH, and were included in the EE/CA (URS, 1995a).

In 1997, approximately 9,775 cy of fuel-contaminated soil were excavated from the PH 8210 site. Additional soil was excavated during pipeline removal activities. The excavated soil was disposed of in LF-3. Confirmation soil samples were collected as part of the removal action. Confirmation sampling results indicated concentrations of TPH exceeding remediation goals in the area of the former pumphouse at 12 feet bgs. However, given the site conditions, the depths of the residual contamination, at or greater than 10 feet bgs, and the unlikelihood of human exposure to this contamination (i.e., no projected future construction activities), further action does not appear warranted based on human and ecological risks (JTL, 1998).

SECTION 5

Confirmation sampling also identified concentrations of benzo(a)anthracene in excess of the remediation goal in several confirmation soil samples. The remediation goal for this compound was based on the potential for the contaminant to leach to groundwater, rather than human health or ecological risk-based values. The concentrations remaining in the soil at the site do not pose an unacceptable risk to human health or ecological receptors, and although the concentrations exceed the leaching-based remediation goal, the OLM tends to be conservative for this compound and review of available data for groundwater underlying the site revealed no detections for this compound. Therefore, No Further Action is necessary for the PH 8210 site.

5.4.2 PH 8270

The PH 8270 site, located southeast of the Arch Hangar, was used from the early 1950s through 1963 for fueling and defueling aircraft. In 1992, the pumphouse was demolished and all USTs, valve pits, and piping were removed. The RI identified fuel-related contaminants and localized areas of PCBs in soil (ABB-ES, 1994).

Fuel-related SVOCs, mostly PAHs, were detected in both surface and subsurface soils at concentrations up to 58 mg/kg. No PCBs were detected in surface soil, and only one subsurface soil sample contained PCBs (Aroclor-1260 at 0.25 mg/kg). TPH was detected in surface and subsurface soils near the former storage tanks and pipelines associated with fueling operations.

The human health RA conducted as part of the RI concluded that the carcinogenic risk for the construction worker, based on the RME and anticipated future commercial/industrial use of the site, was $2E-04$. The estimated risk exceeds both the USEPA carcinogenic risk range of $1E-04$ to $1E-06$ and the MEDEP cancer risk guidance value of $1E-05$. The noncarcinogenic risk for the site, based on the RME and anticipated future land use, resulted in an HI of 39, which exceeds the guidance value of 1.

The ecological risk assessment conducted as part of the RI concluded that there were potential risks to ecological receptors. Based on the maximum concentrations detected, HIs for the receptors evaluated ranged from 0.046 to 24.

An EE/CA for the PH 8270 site recommended excavation and disposal of fuel-contaminated soil. Site-specific, risk-based remediation goals, which also considered the contamination of groundwater due to leaching of the contaminants, were developed for PAHs, PCBs (Aroclor-1260), and TPH, and were included in the EE/CA (URS, 1995a).

In 1997, approximately 2,336 cy of fuel-contaminated soil were excavated from the PH 8270 site. Additional soil was excavated during pipeline removal activities. The excavated soil was disposed

of in LF-3. Confirmation soil samples were collected as part of the removal action. Confirmation sampling results indicated concentrations of TPH exceeding remediation goals at one location in the area of the former pumphouse at 10 feet bgs. However, given the site conditions, the depth of the residual contamination, at 10 feet bgs, and the unlikelihood of human exposure to this contamination (i.e., no projected future construction activities), further action does not appear warranted based on human and ecological risks (JTL, 1998).

Confirmation sampling also identified concentrations of benzo(a)anthracene in excess of the remediation goal in several confirmation soil samples. The remediation goal for this compound was based on the potential for the contaminant to leach to groundwater, rather than human health or ecological risk-based values. The concentrations remaining in the soil at the site do not pose an unacceptable risk to human health or ecological receptors, and although the concentrations exceed the leaching-based remediation goal, the OLM tends to be conservative for this compound and review of available data for groundwater underlying the site revealed no detections for this compound. Therefore, No Further Action is necessary for the PH 8270 site.

5.4.3 FSSB

The FSSB site, located near the northeast corner of the Arch Hangar, was used to store paint thinner and solvents for aircraft maintenance. During the years of operation at the FSSB site several leaks or spills of solvents apparently occurred around the building. The RI identified solvent- and fuel-related contaminants in soil (ABB-ES, 1994).

Although no VOCs were detected in off-site laboratory surface soil samples, low concentrations of solvent- and fuel-related VOCs were detected during field screening. Low concentrations of PAHs (less than 5 mg/kg) and pesticides (up to 10 mg/kg) were detected in surface soil samples. Aroclor-1260 was detected at 0.005 mg/kg in one surface soil sample. Antimony, cadmium, chromium, lead, and mercury were also detected in surface soil samples at concentrations above the established Site background levels.

VOCs detected in subsurface soils included 1,1,1-trichloroethane (TCA) at concentrations up to 0.062 mg/kg. Toluene was also detected in one subsurface soil sample at 0.002 mg/kg. SVOCs, pesticides, and inorganics were detected in subsurface soils, but at lower concentrations than detected in surface samples.

The human health RA conducted as part of the RI concluded that the carcinogenic risk for the construction worker, based on the RME and anticipated future commercial/industrial use of the site, was 1E-04. The estimated risk is within the USEPA carcinogenic risk range of 1E-04 to 1E-06, but exceeds the MEDEP cancer risk guidance value of 1E-05. The noncarcinogenic risk for

SECTION 5

the site, based on the RME and anticipated future land use, resulted in an HI of 3, which is exceeds the guidance value of 1.

The ecological risk assessment conducted as part of the RI concluded that there were potential risks to ecological receptors. Based on the maximum concentrations detected, HIs for the receptors evaluated ranged from 1 to 380.

An EE/CA for the FSSB site recommended excavation and disposal of contaminated soil. Site-specific, risk-based remediation goals were developed for organic solvents, PAHs, lead, and TPH, and were included in the EE/CA (URS, 1995a).

In 1995, approximately 417 cy of contaminated soil were excavated from the FSSB site and disposed of in LF-3. Confirmation soil samples were collected as part of the removal action. Confirmation sampling results indicated contaminant concentrations were below the risk-based remediation goals with the exception of one location (Bechtel, 1996). This area was excavated in 1996. Following excavation, confirmation sampling showed concentrations of contaminants below the risk-based remediation goals (Bechtel, 1997a).

Because the removal action at the FSSB site met the established risk-based remediation goals, the FSSB site does not pose an unacceptable risk to human health or ecological receptors. Therefore, No Further Action is necessary for the FSSB site.

5.5 OPERABLE UNIT 11

Two sites in OU 11 are recommended for No Further CERCLA Action. These sites are the RMSA site and the VMB site. A complete discussion of site characteristics can be found in the OU 11 RI Report (ABB-ES, 1996a)

5.5.1 RMSA

The RMSA site consists of one building and a parking area located on the southwest side of the base, on the eastern side of Pennsylvania Avenue. The RMSA site building was used as a maintenance site for large fuel trucks. Building floor drains were connected to an OWS and UST located east of the building. A dry well was also located east of the building. The RI identified solvent- and fuel-related contaminants in soil (ABB-ES, 1996a). Chlorinated solvents and fuel-related contaminants appear to have been released from a malfunctioning OWS during operations at the RMSA site.

VOCs were detected in two surface soil samples at concentrations of less than 0.1 mg/kg. PCBs (less than 2 mg/kg) and TPH (up to 2,100 mg/kg) were detected in surface soils near the building and concrete pad, adjacent to the building. TPH concentrations beneath paved areas were generally lower. Some inorganics were also detected at concentrations above the established Site background levels. These included barium (38 to 285 mg/kg), cadmium (1 to 7 mg/kg), chromium (26 to 69 mg/kg), lead (13 to 536 mg/kg), mercury (0.4 to 0.5 mg/kg), and zinc (56 to 498 mg/kg).

Subsurface soil contamination was detected near the small concrete pad, at a nearby dry well, and in the drainageway and along the edge of the pavement north of the OWS. Most subsurface soil contamination was identified to be less than 10 feet bgs. Chlorinated and aromatic VOCs were detected in subsurface soils at concentrations up to 9.2 mg/kg. SVOCs, pesticides, and PCBs were detected (less than 5 mg/kg) in subsurface soils. Some inorganics were also detected in subsurface soils above Site background levels. These included barium (28 to 285 mg/kg), cadmium (1 to 7 mg/kg), chromium (26 to 69 mg/kg), cyanide (1 to 202 mg/kg), lead (12 to 536 mg/kg), mercury (0.03 to 0.5 mg/kg), and zinc (52 to 498 mg/kg).

The human health RA conducted as part of the RI concluded that the carcinogenic risk for the commercial/industrial worker, based on the RME and anticipated future commercial/industrial use of the site, was 1E-05. The estimated risk is within the USEPA carcinogenic risk range of 1E-04 to 1E-06 and at the MEDEP cancer risk guidance value of 1E-05. The noncarcinogenic risk for the site, based on the RME and anticipated future land use, resulted in an HI of 0.1, which is less than the guidance value of 1.

The ecological risk assessment conducted as part of the RI concluded that there were potential risks to ecological receptors. Based on the maximum concentrations detected, HIs for the receptors evaluated ranged from 0.021 to 4.

An EE/CA for the RMSA site recommended excavation and disposal of contaminated soil. Site-specific, risk-based remediation goals were developed for PAHs (benzo(a)pyrene), PCBs (Aroclors 1254 and 1260), and TPH, and were included in the EE/CA (URS, 1995a).

In 1995, approximately 5,030 cy of contaminated soil were excavated from the RMSA site and disposed of in LF-3. Confirmation soil samples were collected as part of the removal action. Confirmation sampling results indicated contaminant concentrations were below the risk-based remediation goals with the exception of one localized area east of the building and one location beneath the footing of the building foundation (Bechtel, 1996). TPH was the only contaminant of concern at both locations that exceeded remediation goals.

SECTION 5

Based on the TPH contamination remaining at the RMSA site, a residual risk evaluation was performed (AFBCA, 1998). Results of the evaluation indicated that, given the location of the residual contamination (i.e., underneath the building foundation), human exposure to this contamination is unlikely. Therefore, the detected concentrations of TPH remaining in soil beneath the RMSA building do not pose an unacceptable risk under CERCLA to human health or ecological receptors.

The residual petroleum contamination remaining in the localized area east of the building will be further evaluated in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater).

Because the residual petroleum contamination remaining in soil beneath the building does not pose an unacceptable risk under CERCLA to human health and ecological receptors, and the residual petroleum contamination remaining in the localized area east of the building will be further evaluated in accordance with applicable state requirements, No Further CERCLA Action is necessary for the RMSA site.

5.5.2 VMB

The VMB site is on the northwestern corner of OU 11, southeast of the intersection of Pennsylvania and South Carolina Roads. The site occupies approximately 15 acres and includes two buildings. Waste oil, antifreeze, and solvents were generated at the VMB. The OU 11 RI (ABB-ES, 1996a) identified fuel contaminants in shallow soil west of the buildings, and fuels and PCBs in the drainage ditches east and south of the buildings. Fuels, including TPH, were identified as contaminants at the OWS and the associated grease trap. Additionally, chlorinated solvents were identified as contaminants in a localized "hot spot" area at the southeastern corner of the upper parking lot (ABB-ES, 1996a).

VOCs were detected in surface soils at concentrations of less than 0.1 mg/kg. Several SVOCs (less than 2 mg/kg) and PCBs (up to 0.2 mg/kg) were also detected in surface soil. TPH was detected in surface soil at concentrations up to 2,100 mg/kg. A majority of the contamination is present in soils in the area of the former USTs located west of Building 7500 and along the drainage ditch located south of the building. Surface soil and sediment samples collected within the stained drainage ditch south of the building detected aromatic and chlorinated VOCs, SVOCs, pesticides, PCBs, and inorganics. TPH was also detected at concentrations up to 45,000 mg/kg.

VOCs were detected in subsurface soil samples at concentrations of less than 1 mg/kg, but concentrations of VOCs near the former USTs were substantially higher (up to 310 mg/kg of total xylenes). Several SVOCs (up to 25 mg/kg) and PCBs (up to 0.2 mg/kg) were detected in

subsurface soils. TPH was also detected in subsurface soils at concentrations up to 1,500 mg/kg. Most of the contamination was detected near the former USTs, and the highest TPH concentrations were located within 15 feet of ground surface.

Supplemental investigations conducted in the area at the southeastern corner of the upper parking lot identified a localized "hot spot" area contaminated with chlorinated solvents. Soil contaminants included PCE (0.0014 to 19 mg/kg), trichloroethene (TCE) (0.0012 to 0.13 mg/kg), and TCA (0.0013 to 0.0017 mg/kg).

The human health RA conducted as part of the RI concluded that the carcinogenic risk for the commercial/industrial worker, based on the RME and anticipated future commercial/industrial use of the site, was $2E-06$. The estimated risk is within the USEPA carcinogenic risk range of $1E-04$ to $1E-06$ and below the MEDEP cancer risk guidance value of $1E-05$. The noncarcinogenic risk for the site, based on the RME and anticipated future land use, resulted in an HI of 0.02, which is less than the guidance value of 1.

The ecological risk assessment conducted as part of the RI concluded that there were minimal potential risks to ecological receptors. Based on the maximum concentrations detected, HIs for the receptors evaluated ranged from 0.0032 to 1.3.

An EE/CA completed for the VMB site recommended excavation and disposal of contaminated soil and sediment in the drainage ditch, and bioventing of the soil west of the building in the area of the former USTs (URS, 1995a). Site-specific, risk-based remediation goals were developed for VOCs (benzene and xylenes), SVOCs, PCBs (Aroclors 1254 and 1260), and TPH, and were included in the EE/CA (URS, 1995a).

Another EE/CA completed for the "hot spot" area of the VMB site recommended ex-situ SVE. Site-specific, risk-based remediation goals were developed for chlorinated VOCs (i.e., PCE and TCE), and were included in the EE/CA (URS, 1996a).

Drainage ditches. In 1995, approximately 4,960 cy of contaminated soil were excavated from the VMB drainage ditches and an area south of the building. The excavated material was disposed of in LF-3. Confirmation soil samples were collected as part of the removal action. Confirmation sampling results indicated contaminant concentrations were below the risk-based remediation goals with the exception of two locations in the ditch area. The contaminants of concern were benzo(a)pyrene (3.8 mg/kg) at one location and Aroclor-1260 (0.67 mg/kg) at the other location (Bechtel, 1996).

Based on the contamination remaining at the VMB drainage ditch area, a residual risk evaluation was performed (Bechtel, 1996). Although the maximum detected concentrations of

SECTION 5

benzo(a)pyrene and Aroclor-1260 are above the established risk-based remediation goals, the total cancer risk from benzo(a)pyrene for the most conservative scenario (i.e., commercial worker/industrial worker) is $2.1E-06$, and the total cancer risk for Aroclor-1260 is $3.5E-06$; therefore, the summed total cancer risk for these two compounds is $5.6E-06$. These values are below the MEDEP cancer risk guidance value of $1E-05$ and within the USEPA carcinogenic target risk range of $1E-04$ to $1E-06$. Seven other carcinogenic compounds were detected at the site at concentrations below their respective remediation goals. Estimation of their contribution to overall risk indicates that they would not result in the total risk exceeding the MEDEP cancer risk guidance value of $1E-05$ (Bechtel, 1996).

Based on the assessment of residual risk, the VMB drainage ditch area is within the acceptable USEPA target risk range and below the MEDEP cancer risk guidance value. Therefore, No Further Action is necessary at the VMB drainage ditch area.

Former UST area. A bioventing system was installed in 1995 to address the fuel-related contamination west of the building in the area of the former USTs. High groundwater levels at the site have affected the operation of the system since it was installed. Due to the limited effectiveness of the bioventing system, a removal action for the soil and subsequent decommissioning of the system are scheduled for 1998. The petroleum contamination remaining in this area west of the building will be further evaluated in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater).

Grease trap. In 1996, the grease trap associated with the OWS at the VMB site, and soil associated with the grease trap, were excavated and disposed of in LF-3. Confirmation soil samples were collected as part of the removal action. Confirmation sampling results indicated exceedances of the risk-based remediation goals at five locations: one for PCE (3.6 mg/kg), one for Aroclor-1260 (0.43 mg/kg), and three for TPH (2,800; 4,300; and 12,000 mg/kg) (Bechtel, 1997a).

Based on the contamination remaining at the VMB grease trap area, a residual risk evaluation was performed (AFBCA, 1998). The PCE remediation goal of 3 mg/kg was based on a potential for groundwater impact above the MCL/MEG. The potential for the residual concentrations of PCE to leach to groundwater was performed using site-specific removal information and the OLM. Although the resulting groundwater concentration of 11 $\mu\text{g/L}$ exceeds the MEG of 3 $\mu\text{g/L}$, because of the conservative nature of the model, small area of residual contamination, and the current contaminated conditions of the aquifer, additional adverse groundwater impacts are not expected. Although the maximum detected concentration of PCE exceeded the remediation goal, the average detected concentration (1.24 mg/kg) did not.

The PCB remediation goal of 0.2 mg/kg was based on a calculation of the concentration of PCBs in soil that would result in a cancer risk of 1E-06 for the most conservative receptor, the commercial/industrial worker, and is based on exposure to contamination from 0 to 2 feet bgs. The detected concentration of residual PCB contamination is at or below 12 feet bgs and does not warrant a commercial/industrial exposure scenario; therefore, the construction worker scenario was calculated to estimate the risk of residual PCB contamination. This results in a risk of 2.7E-07, which is less than the USEPA carcinogenic risk range of 1E-04 to 1E-06 and the MEDEP cancer risk guidance value of 1E-05. Based on the site conditions; the depth (i.e., greater than 10 feet bgs), size, and magnitude of the residual PCE and PCB contamination that exceed the screening criterion; and the unlikelihood of human exposures to this contamination, No Further CERCLA Action is necessary for the grease trap area of the VMB site to be protective of human health and ecological receptors (AFBCA, 1998).

The residual petroleum contamination remaining in the grease trap area of the VMB site will be further evaluated in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater). Therefore, No Further CERCLA Action is necessary for the grease trap area of the VMB site to be protective of human health and ecological receptors.

OWS. The OWS and an estimated 293 cy of associated soil were removed from the VMB site during the 1997 construction season. The excavated soil was disposed of in LF-3 and confirmation samples were collected as part of the removal action. Confirmation sampling results indicated contaminant concentrations were below the site-specific, risk-based remediation goals with the exception of two exceedances of TPH: one near the building footing (2,500 mg/kg) and the other near the concrete pad for the OWS (914 mg/kg) (Bechtel, 1998b).

Based on the contamination remaining at the VMB OWS area, a residual risk evaluation was performed (AFBCA, 1998). Given the site conditions and the location of the residual contamination that exceeds the screening criterion (i.e., below the building foundation and at or below 10 feet bgs), human exposures to residual TPH contamination is unlikely. Therefore, No Further Action is necessary at the VMB OWS to be protective of human health and ecological receptors.

“Hot spot”. Removal actions were conducted at the “hot spot” area of the VMB site in 1996 and 1997. Approximately 80 cy of soil contaminated with chlorinated solvents was excavated in 1996, transported to the Base Laundry site, and treated ex-situ with the SVE system at the site, in accordance with the EE/CA prepared for OU 11 (URS, 1996a). Confirmation soil samples collected as part of the removal action indicated exceedances of the site-specific, risk-based

SECTION 5

remediation goal for PCE (Bechtel, 1997a). In 1997, approximately 81 cy of additional soil were excavated from the "hot spot" area and transported to the Base Laundry site for treatment with the ex-situ SVE system. Subsequent confirmation soil sampling indicated concentrations of contaminants below the site-specific, risk-based remediation goals (Bechtel, 1998b).

Because the removal action at the "hot spot" area of the VMB site met the established risk-based remediation goals, the area does not pose an unacceptable risk under CERCLA to human health or ecological receptors. Therefore, No Further Action is necessary for the "hot spot" area of the VMB site.

VMB Summary. The current VMB site risks are summarized as follows:

- Based on the assessment of residual risk, the VMB drainage ditch area is within the acceptable USEPA target risk range and below the MEDEP cancer risk guidance value.
- The petroleum contamination remaining in the area of the former USTs west of the building will be further addressed in accordance with applicable state requirements.
- The residual petroleum contamination remaining in the grease trap area of the VMB site will be further addressed in accordance with applicable state requirements.
- Because the petroleum contamination remaining at the VMB OWS is below the building foundation and at or below 10 feet bgs, human or ecological exposure to the residual TPH contamination is unlikely. Based on modeling, the potential resulting groundwater contamination does not exceed the risk-based screening value for TPH in groundwater.
- Confirmation soil sampling results from the "hot spot" area indicated that the concentration of contaminants is below the site-specific, risk-based remediation goals.

Because the CERCLA contaminants have been removed or are at concentrations and depths that do not pose an unacceptable risk under CERCLA to human health and ecological receptors; and petroleum-related contamination remaining, not regulated, will continue to be addressed in accordance with applicable state requirements, No Further CERCLA Action is necessary for the VMB site.

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response action selected in this ROD, may represent an imminent and substantial endangerment to public health, welfare, or the environment.

5.6 SUMMARY OF SITE CONDITIONS

Table 5-1 presents the site conditions for each site addressed in this ROD. The table summarizes, by OU and site, the results of the baseline risk assessment; the compounds for which remediation goals were developed to address the site risks; whether the confirmation samples collected during the removal actions achieved the established remediation goals; and, where appropriate, the results of the residual risk evaluations.

TABLE 5-1
 SUMMARY OF SITE CONDITIONS
 NO FURTHER CERCLA ACTION FOR SITES WITHIN OUs 3, 5, 10, AND 11

RECORD OF DECISION
 LORING AIR FORCE BASE

OPERABLE UNIT AND SITE	BASELINE RISK ASSESSMENT ^{1,2}		CONTAMINANTS FOR WHICH REMOVAL ACTION REMEDIATION GOALS WERE DEVELOPED	CONFIRMATION SAMPLE RESULTS ACHIEVED REMEDIATION GOALS	RESIDUAL RISK EVALUATION RESULTS AND COMMENTS
	Human Health Risk ³	Ecological Risk ⁴			
	Cancer			Yes	No
	Non-cancer				
OU 3					
EOD Range Site	3E-06	1	9.3	NA	NA
			NA		Aluminum and phosphorus are the primary risk contributors associated with the Hazard Index of 9.3. The maximum concentration of aluminum did not exceed the established Site background levels. Phosphorus was detected in only one of 32 samples.
OFR Site	5E-05	0.9	0.9		x
			Lead		Although lead was detected in confirmation soil samples in excess of Site background concentrations, the average lead concentration remaining in soil (1,651 mg/kg) is less than the lead screening level calculated based on the USEPA IEUBK Model. Therefore, No Further Action is necessary.
OU 5					
BXSS Site	7E-06	1.8	24	NA	NA
			VOCs, TPH, Lead		A Consensus Statement, signed by the U.S. Air Force, USEPA, and MEDEP in May 1995, removed the BXSS source area portion of the site from the Federal Facility Agreement and the CERCLA process because the petroleum-related contamination is not regulated under CERCLA. This contamination will continue to be addressed in accordance with applicable state requirements.

TABLE S-1
SUMMARY OF SITE CONDITIONS
NO FURTHER CERCLA ACTION FOR SITES WITHIN OUs 3, 5, 10, AND 11

RECORD OF DECISION
LORING AIR FORCE BASE

OPERABLE UNIT AND SITE	BASELINE RISK ASSESSMENT ^{1,2}		CONTAMINANTS FOR WHICH REMOVAL ACTION REMEDIATION GOALS WERE DEVELOPED	CONFIRMATION SAMPLE RESULTS ACHIEVED REMEDIATION GOALS		RESIDUAL RISK EVALUATION RESULTS AND COMMENTS
	Human Health Risk ³	Ecological Risk ⁴		Yes	No	
	Cancer	Non-cancer				
Drainage Ditch	NA	NA	Lead, TPH	x		NA
OU 10						
FSSB Site	1E-04	3	Organic solvents, PAHs, Lead, TPH	x		NA
PH 8210 Site	1E-04	1	PAHs, PCBs, TPH		x	The TPH residual soil contamination is at or below 10 feet below ground surface, the maximum depth used during risk calculations. Although PAHs were detected in confirmation soil samples in excess of the leaching-based remediation goals, review of available data for groundwater underlying the site revealed no detections for these compounds. Therefore, No Further Action is necessary.
PH 8270 Site	2E-04	39	PAHs, PCBs, TPH		x	The TPH residual soil contamination is at or below 10 feet below ground surface, the maximum depth used during risk calculations. Although PAHs were detected in confirmation soil samples in excess of the leaching-based remediation goals, review of available data for groundwater underlying the site revealed no detections for these compounds. Therefore, No Further Action is necessary.
OU 11						
RMSA Site	1E-05	0.1	PAHs, PCBs, TPH		x	Human exposure to the TPH residual soil

**TABLE S-1
SUMMARY OF SITE CONDITIONS
NO FURTHER CERCLA ACTION FOR SITES WITHIN OUs 3, 5, 10, AND 11**

**RECORD OF DECISION
LORING AIR FORCE BASE**

OPERABLE UNIT AND SITE	BASELINE RISK ASSESSMENT ^{1,2}		CONTAMINANTS FOR WHICH REMOVAL ACTION REMEDIATION GOALS WERE DEVELOPED	CONFIRMATION SAMPLE RESULTS ACHIEVED REMEDIATION GOALS		RESIDUAL RISK EVALUATION RESULTS AND COMMENTS
	Human Health Risk ³	Ecological Risk ⁴		Yes	No	
	Cancer					
	Non-cancer					
VMB Site	2E-06	0.02	VOCs, SVOCs, PCBs, TPH	NA	NA	contamination beneath the building foundation is unlikely. The TPH residual soil contamination in the localized area east of the building will be further evaluated in accordance with applicable state requirements. Therefore, No Further CERCLA Action is necessary. The baseline risk assessment was performed on the overall VMB site; however, remediation goals were developed and removal actions were conducted for specific portions of the site as listed below.
Ditches	NA	NA	PCBs, TPH		x	The total residual risk resulting from PCB and TPH contamination is 5.6E-06, which is within the USEPA carcinogenic risk range and below the MEDEP cancer risk guidance value. Therefore, No Further Action is necessary.
UST Area	NA	NA	VOCs, TPH	NA	NA	The bioventing system installed in 1995 will be decommissioned in 1998 and the remaining TPH-contaminated soil will be further evaluated in accordance with applicable state requirements. Therefore, No Further CERCLA Action is necessary.
Grease Trap	NA	NA	VOCs, SVOCs, PCBs, TPH		x	One confirmation soil sample resulted in PCE at 3.6 mg/kg which exceeded the

**TABLE 5-1
SUMMARY OF SITE CONDITIONS
NO FURTHER CERCLA ACTION FOR SITES WITHIN OUs 3, 5, 10, AND 11**

**RECORD OF DECISION
LORING AIR FORCE BASE**

OPERABLE UNIT AND SITE	BASELINE RISK ASSESSMENT ^{1,2}		CONTAMINANTS FOR WHICH REMOVAL ACTION REMEDIATION GOALS WERE DEVELOPED	CONFIRMATION SAMPLE RESULTS ACHIEVED REMEDIATION GOALS		RESIDUAL RISK EVALUATION RESULTS AND COMMENTS
	Human Health Risk ³	Ecological Risk ⁴		Yes	No	
	Cancer	Non-cancer				
Oil/water Separator	NA	NA	VOCs, SVOCs, PCBs, TPH		x	remediation goal of 3 mg/kg; however, the average PCE concentration detected in confirmation soil samples was 1.24 mg/kg. Because of the small area of residual contamination and the current contaminated conditions of the aquifer, additional adverse impacts are not expected. The total residual risk resulting from PCB contamination is 2.7E-07, which is below the USEPA carcinogenic risk range and the MEDEP cancer risk guidance value. The TPH residual soil contamination will be further evaluated in accordance with applicable state requirements. Therefore, No Further CERCLA Action is necessary. Human exposure to the TPH residual soil contamination beneath the building foundation and at or below 10 feet below ground surface is unlikely. Therefore, No Further Action is necessary.
Hot Spot	NA	NA	VOCs	x		NA

Notes:

1. Refer to the Final RI Reports for OUs 3, 5, 10, and 11 for further details regarding the baseline risk assessments.
2. The USEPA carcinogenic risk range is 1E-04 to 1E-06. The MEDEP cancer risk guidance value is 1E-05. For noncarcinogenic and ecological risk, the USEPA and MEDEP consider a Hazard Index less than or equal to one acceptable.
3. The human health risk presented is the reasonable maximum exposure (RME) based on the expected future land use.

**TABLE S-1
SUMMARY OF SITE CONDITIONS
NO FURTHER CERCLA ACTION FOR SITES WITHIN OUs 3, 5, 10, AND 11**

**RECORD OF DECISION
LORING AIR FORCE BASE**

4. The ecological risk presented is the most conservative Hazard Index for the ecological receptors evaluated.

- BXSS = Base Exchange Service Station
- CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
- EOD = Explosive Ordnance Disposal
- FSSB = Former Solvent Storage Building
- IEUBK = Integrated Exposure Uptake Biokinetic Model for Lead in Children
- MEDEP = Maine Department of Environmental Protection
- mg/kg = milligrams per kilogram
- NA = not applicable
- OFR = Outdoor Firing Range
- OLM = organic leaching model
- OU = Operable Unit
- PAH = polynuclear aromatic hydrocarbons
- PCB = polychlorinated biphenyls
- PCE = tetrachloroethene
- PH = Pumphouse
- RMSA = Refueling Maintenance Shop Area
- SVOC = semivolatile organic compound
- TPH = total petroleum hydrocarbons
- µg/L = microgram per liter
- USEPA = U.S. environmental Protection Agency
- UST = underground storage tank
- VMB = Vehicle Maintenance Building
- VOC = volatile organic compound

6.0 DESCRIPTION OF THE NO FURTHER CERCLA ACTION ALTERNATIVE

The USAF and USEPA, with concurrence of the MEDEP, have determined that No Further CERCLA Action is necessary for the source areas (i.e., surface and subsurface soils) at the EOD Range site and Outdoor Firing Range site in OU 3; the BXSS site in OU 5; the PH 8210 site, the PH 8270 site, and the FSSB site in OU 10; and the RMSA site and VMB site in OU 11.

The USAF has evaluated the potential risks to human health and the environment at each of these sites and developed the site-specific remediation goals for the source areas at each of these sites based on the future land use determinations made in the April 1996 Record of Decision for the Disposal of Loring Air Force Base, Maine (hereinafter Disposal ROD). Therefore, the No Further CERCLA Action decisions for the source areas at each of these sites is based on the assumption that future land use at each site shall be in accordance with the Disposal ROD (i.e., that real property comprising the site shall be parcelled, disposed of, and reused in accordance with the Disposal ROD).

No Further CERCLA Action is necessary for the soil at the EOD Range site in OU 3 because the soil at the site does not pose an unacceptable risk under CERCLA to human health and ecological receptors. The USAF will clear the site of any EOD-related residuals and the site will not be released for reuse until the clearance is approved by the Department of Defense Explosive Safety Board, anticipated in 1999. No Further Action is necessary for the soil at the Outdoor Firing Range site because a previous response at the site eliminated the need to conduct additional remedial action, and the soil at the site does not pose an unacceptable risk under CERCLA to human health and ecological receptors.

No Further CERCLA Action is necessary for the soil at the BXSS site in OU 5. In accordance with a Consensus Statement signed by the USAF, USEPA, and MEDEP in May 1995, petroleum-related soil contamination at the BXSS site will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater). The contaminated soil and sediments in the drainage ditch at the BXSS site have been removed and this portion of the site no longer poses an unacceptable risk under CERCLA to human health and ecological receptors. Restoration of the wetland impacted by the excavation activities will be conducted in accordance with the Mitigation Process Plan for the Loring Wetlands Management Program, prepared in accordance with applicable federal and state regulations and approved by the USEPA and MEDEP in 1995. The No Further CERCLA Action decision for the BXSS site does not constitute a finding by the USEPA that adequate protection has been achieved at the site.

SECTION 6

No Further Action is necessary for the soil at the PH 8210 site, the PH 8270 site, and the FSSB site in OU 10 because the removal actions conducted at these sites between 1995 and 1997 have removed the contamination sources and the remaining soil at the sites does not pose an unacceptable risk to human health and ecological receptors.

No Further CERCLA Action is necessary at the RMSA site and VMB site in OU 11 because CERCLA contaminants have been removed or are at concentrations and depths that do not pose an unacceptable risk, under CERCLA, to human health and ecological receptors. The petroleum-related soil contamination remaining at these sites is not regulated under CERCLA. This petroleum-related contamination will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater). The No Further CERCLA Action decision for the RMSA site and VMB site does not constitute a finding by the USEPA that adequate protection has been achieved at these sites.

Although the USAF and USEPA, with concurrence of the MEDEP, have determined that No Further CERCLA Action is necessary for the source areas at the sites referenced above, further CERCLA action may be required to address other media (i.e., groundwater and surface water) at these sites. The groundwater and surface water associated with the sites shall be addressed in OU 12 and OU 13, respectively.

The USEPA has the authority to reopen or amend the No Further CERCLA Action decisions presented in this decision document even if all or part of the Site is deleted from the NPL. The USEPA may exercise such authority at any of the sites referenced above in circumstances including, but not limited to, (1) if, in the future, conditions at the site indicate that an unacceptable risk to human health or the environment may result from exposure to contaminants at the site, or (2) if there is a change in land use at the site from the reuse determined in the Disposal ROD for the real property comprising the site. The USAF shall, in consultation with the USEPA and MEDEP, consider the imposition of proper institutional controls to restrict the future land uses of the sites and assure proper notification of future owners. The USAF is prepared to initiate such controls where it, the USEPA, and MEDEP determine that such controls would be appropriate.

The site-specific remediation goals developed for the source areas at each of the sites referenced above are based on the future land use determinations made in the Disposal ROD. Since these remediation goals will not allow for unrestricted use and unlimited exposure, the USAF will conduct five-year site reviews at each site in accordance with CERCLA Section 121 and the NCP. The USAF will continue such five-year site reviews for each site until the levels of contaminants remaining at the site allow for unrestricted use and unlimited exposure.

7.0 DOCUMENTATION OF NO SIGNIFICANT CHANGES

The USAF issued a Proposed Plan outlining the preferred alternative of No Further CERCLA Action for Sites Within OUs 3, 5, 10, and 11 (ABB-ES, 1998). The Proposed Plan described the USAF's decision to pursue No Further CERCLA Action at the following sites.

OU 3	EOD Range Outdoor Firing Range
OU 5	BXSS
OU 10	PH 8210 PH 8270 FSSB
OU 11	RMSA VMB

No significant changes have been made to the preferred alternative described in the Proposed Plan.

8.0 STATE ROLE

The MEDEP, as a party to the FFA, has reviewed the preferred alternative. The MEDEP has also reviewed the RIs, Risk Assessments, EE/CAs, Action Memoranda, and Removal Action Reports to determine if the selected remedies are in compliance with pertinent state environmental laws and regulations.

The MEDEP concurs with the No Further CERCLA Action decision for source areas (i.e., surface and subsurface soils) at the following sites within OUs 3, 5, 10, and 11:

OU 3	EOD Range Outdoor Firing Range
OU 5	BXSS
OU 10	PH 8210 PH 8270 FSSB
OU 11	RMSA VMB

A copy of the Letter of Concurrence is presented in Appendix C of this ROD.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
AFBCA	Air Force Base Conversion Agency
ASI	Additional Site Investigation
Bechtel	Bechtel Environmental, Inc.
BEEF	Base Engineer Emergency Force
BEHP	bis(2-Ethylhexyl)phthalate
bgs	below ground surface
BXSS	Base Exchange Service Station
CDM	Camp Dresser McKee - Federal Programs Corporation
COC	Contaminant of Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRP	Community Relations Plan
CSP	Coal Storage Pile
cy	cubic yard
DRMO	Defense Reutilization and Marketing Office
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
FAD	Fly Ash Disposal
FFA	Federal Facility Agreement
FJETC	Former Jet Engine Test Cell
FSSB	Former Solvent Storage Building
FTF	Fuels Tank Farm
HAZWRAP	Hazardous Waste Remedial Actions Program
HI	Hazard Index
HQ	Hazard Quotient
IRP	Installation Restoration Program
JTL	J.T. Langille, Inc. Consulting Engineers
LAFB	Loring Air Force Base
LAW	Law Environmental, Inc.
LF-3	Landfill 3

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

MCL	Maximum Contaminant Levels
MEDEP	Maine Department of Environmental Protection
MEG	Maximum Exposure Guidelines
mg/kg	milligrams per kilogram
NCP	National Contingency Plan
NDA	Nose Dock Area
NPL	National Priorities List
OLM	organic leaching model
OU	Operable Unit
OWS	oil/water separator
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyls
PCE	tetrachloroethene
PH	Pumphouse
PX	Post Exchange
RA	Risk Assessment
RfD	Reference Dose
RAB	Restoration Advisory Board
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
RMSA	Refueling Maintenance Shop Area
ROD	Record of Decision
SI	Site Investigation
SVE	soil vapor extraction
SVOC	semivolatile organic compound
TCA	trichloroethane
TCE	trichloroethene
TPH	total petroleum hydrocarbon
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
URS	URS Consultants, Inc.
USAF	U.S. Air Force

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VMB	Vehicle Maintenance Building
VOC	volatile organic compound

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TRANSCRIPT OF PUBLIC MEETING

STATE OF MAINE

AROOSTOOK, ss.

PUBLIC HEARING

PROPOSED PLAN FOR OPERABLE UNITS 3, 5, 10, & 11

MARCH 19, 1998

HELD AT: CARIBOU CITY OFFICE
25 HIGH STREET
CARIBOU, MAINE

7:12 P.M.

BENNETT LEGAL TRANSCRIPT SERVICES
P.O. BOX 947
CARIBOU, ME. 04736-0947
(207) 498-2729

1 7:12 P.M.

2
3 DAVID HOPKINS: Good
4 evening. Welcome to the public hearing to receive
5 comments on the Proposed Plan for Operable Units 3, 5,
6 10, and 11 at Loring Air Force Base. Today's date is
7 March 19th, 1998. My name is David Hopkins, Project
8 Manager for the Installation Restoration Program at
9 Loring. Also here tonight with us is Dave Strainge, as
10 well as Lou Pizzutti representing the Maine Department of
11 Environmental Protection.

12 This hearing is being held in accordance with the
13 provisions of the Comprehensive Environmental Response,
14 Compensation, and Liability Act (CERCLA), as amended in
15 1986, also known as Superfund. The act requires federal
16 facilities on the National Priorities List to present
17 clean up proposals to the local community for comment and
18 consideration before the final clean up decisions are
19 made. The purpose of this hearing is to receive comments
20 on the Proposed Plan for Operable Units 3, 5, 10, and 11.

21 Mr. Philip Bennett from Aroostock Legal Reporters
22 will serve as the court reporter tonight, preparing a
23 verbatim record of the proceedings. The verbatim record
24 will become a part of the final clean up plan. The court
25 reporter will be able to make a complete record only if

1 he is able to hear and understand what you say. With
2 that in mind, please follow these ground rules. Speak
3 only after I recognize you, and please address your
4 remarks to me. State your name and the organization you
5 represent and present your statement. Do not begin
6 speaking until you have reached the microphone and speak
7 slowly and clearly into the microphone. If you have
8 prepared your statement beforehand, you may read it aloud
9 or you may paraphrase it and place it on the table.

10 Are there any individuals wishing to make a comment
11 or statement at this time?

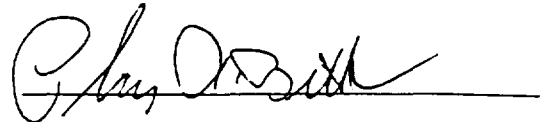
12 Ladies and gentlemen, it is 7:15, March 19th, 1998
13 and I declare the public hearing to receive comments on
14 the Proposed Plan for Operable Units 3, 5, 10, and 11 at
15 Loring Air Force Base closed.

16
17 END OF HEARING
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C E R T I F I C A T I O N

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I HEREBY CERTIFY THAT the foregoing is a true and correct transcript of my stenographic notes taken at the public hearing on the aforementioned hearing date.



Philip R. Bennett, Jr.,

Court Reporter

RESPONSIVENESS SUMMARY

APPENDIX B
RESPONSIVENESS SUMMARY

The Air Force held a 30-day comment period from March 9, 1998 to April 7, 1998, to provide an opportunity for the public to comment on the Proposed Plan and other documents developed for Operable Units (OUs) 3, 5, 10, and 11 at the former Loring Air Force Base (LAFB), Maine. The Proposed Plan is the document that identifies the No Further Action decision under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for the following sites located within OUs 3, 5, 10, and 11 at the former LAFB:

- OU 3 Explosive Ordnance Disposal (EOD) Range
 Outdoor Firing Range

- OU 5 Base Exchange Service Station (BXSS)

- OU 10 Pumphouse (PH) 8210
 PH 8270
 Former Solvent Storage Building (FSSB)

- OU 11 Refueling Maintenance Shop Area (RMSA)
 Vehicle Maintenance Building (VMB)

The Air Force's recommendation of No Further CERCLA Action for source area soils at the above listed sites was presented in the Proposed Plan for OUs 3, 5, 10, and 11, which was issued on March 9, 1998. All documents on which the decision was based were placed in the Administrative Record for review.

The Air Force received no verbal or written comments on the Proposed Plan for No Further CERCLA Action for Sites Within OUs 3, 5, 10, and 11 during the public hearing held on March 19, 1998, or during the 30-day public comment period.

The Air Force will select the No Further CERCLA Action decision for source area soils at the EOD Range and Outdoor Firing Range in OU 3; the BXSS in OU 5; PH 8210, PH 8270, and the FSSB in OU 10; and the RMSA and VMB in OU 11. The groundwater associated with these sites will be addressed as part of OU 12, the basewide groundwater OU.

LETTER OF CONCURRENCE



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR

EDWARD O. SULLIVAN
COMMISSIONER

June 29, 1998

Mr. Peter Forbes
Remedial Project Manager
Air Force Base Conversion Agency
Operation Location "M"
RR # 1 Box 1719
Limestone, ME 04750

RE: Concurrence letter for the No Further Action Record of Decision (ROD) at Loring Air Force Base Superfund Site, Maine

Dear Mr. Forbes:

The Maine Department of Environmental Protection (MEDEP) has reviewed the June 1998 Draft Final No Further Action ROD for sites within OU's 3,5,10, and 11 at Loring Air Force Base Superfund Site, located in Limestone, Maine.

Based on the Draft Final ROD, The MEDEP concurs with the Air Force's determination that no further action under CERCLA is necessary to address the contamination at some sites within the above referenced OU's. The MEDEP's concurrence is limited to the following sites:

- OU3 Explosive Ordnance Disposal (EOD) Range
Outdoor Firing Range
- OU5 Base Exchange Service Station (BXSS)
- OU10 Pumphouse (PH) 8210
PH 8270
Former Solvent Storage Building (FSSB)
- OU11 Refueling Maintenance Shop Area (RMSA)
Vehicle Maintenance Building (VMB)

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PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 764-1507

Description of the No Further CERCLA Action Alternative

The MEDEP concurs with the USAF evaluation of the potential risks to human health and the environment and with the developed site-specific remediation goals for the source areas (i.e., surface and subsurface soils) at the above sites. The risk assessment and remedial goals for these sites were based on the future land use determinations made in the April 1996 Record of Decision for the Disposal of Loring Air Force Base. Therefore, the No Further CERCLA decisions for the source areas at each of these sites is based on the assumption that future land use at each site shall be in accordance with the Disposal ROD (i.e., the real property comprising the site shall be parceled, disposed of, and reused in accordance with the Disposal ROD). **For each of these sites, the USAF shall assure that all necessary and applicable deed restrictions, as described in the ROD, are in place and enforced prior to transfer to future owners.**

Operable Unit Three (OU3):

No Further CERCLA Action is necessary for the soil at the EOD Range Site in OU3 because the soil at the site does not pose an unacceptable risk to human health and ecological receptors. The USAF will clear the site of any EOD-related residuals and the site will not be released for reuse until the clearance is approved by the Department of Defense Explosive Safety Board. No Further Action is necessary at the Outdoor Firing Range site because a previous response at the site eliminated the need to conduct additional remedial action, and the soil at the site does not pose an unacceptable risk under CERCLA to human health and ecological receptors.

Operable Unit Five (OU5):

No Further CERCLA Action is necessary for the soil at the BXSS site in OU5. In accordance with a consensus statement signed by the three parties in May 1995, petroleum-related soil contamination at the BXSS site will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedural Guidelines for Establishing Standards for the Remediation of Contaminated Soil and Groundwater) which should achieve adequate protection to human health and ecological receptors at the site. The contaminated soil and sediment in the drainage ditch west of the BXSS site has been removed and this portion of the site no longer poses a risk under CERCLA to human health and ecological receptors. Restoration of the wetland impacted by the excavation activities will be conducted in accordance with the Mitigation Process Plan for the Loring Wetlands Management Program, prepared in accordance with applicable federal and state regulations.

Operable Unit Ten (OU10):

No Further CERCLA Action is necessary for the soil at the PH 8210 site, the PH 8270 site and the FSSB site in OU10 because the removal actions conducted at the sites between 1995 and 1997 have removed the contamination sources and the remaining soil at the sites does not pose an unacceptable risk to human health and ecological receptors.

Operable Unit Eleven (OU11):

No Further CERCLA Action is necessary at the RMSA site and VMB site in OU11 because CERCLA contaminants have been removed or are at concentrations in depth that do not pose an unacceptable risk, under CERCLA, to human health and ecological receptors. Petroleum-related soil contamination remaining at the site is not regulated under CERCLA. The petroleum-related contamination will continue to be addressed in accordance with applicable state requirements (i.e., MEDEP Chapter 691, Rules for Underground Oil Storage Facilities; and MEDEP Procedure Guidelines for Establishing Standards for the Remediation of Contaminated Soil in Groundwater) which should achieve adequate protection to the human health and ecological receptors at the site.

Although the MEDEP concurs with the USAF that No Further CERCLA Action is necessary for the source areas at the sites referenced above, further action under CERCLA and the state regulations may be required to address other media (i.e., groundwater and surface water) at the sites. The groundwater and surface water associated with the site shall be addressed in OU12 and OU13, respectively.

The State recognizes that the USEPA has the authority to reopen or amend the No Further CERCLA Action decision under the following circumstances; (1) if, in the future, conditions at the site indicate that unacceptable risks to human health or the environment may result from exposure to contaminants at the site, or (2) if there is a change in land use at the site from the reuse determined in the Disposal ROD for the real property comprising the site. The USAF shall, in consultation with the USEPA and MEDEP, consider the imposition of proper institutional controls to restrict the future land use of the sites and assure proper notification of future owners. The USAF is prepared to initiate such control where it, the USEPA, and MEDEP determine that such control would be appropriate and necessary. The site-specific remedial goals developed for the source area at each of these sites referenced above are based on the future land use determinations made in the disposal ROD. Since these remediation goals will not allow unlimited use and unrestricted exposure, the USAF will conduct five-year site reviews in accordance with CERCLA Section 121 and the National Contingency Plan (NCP). **The USAF will continue five-year site reviews for these sites until contaminant levels present allow for unlimited use and unrestricted exposure.**

The State's concurrence in the selected remedy, as described above, should not be construed as the State's concurrence with any conclusion of law or finding of fact which may be set forth in the ROD for sites listed above. The State reserves any and all rights to challenge any such finding of fact or conclusion of law in any other context.

This concurrence is based upon the State's understanding that the MEDEP will continue to participate in the Federal Facilities Agreement and in the review and approval of operational,

design, and monitoring plans. The MEDEP looks forward to working with the Department of the Air Force and the USEPA to resolve the environmental problems caused by the sites.

For additional information please do not hesitate to contact Mark Hyland or myself at (207) 287-2651.

Sincerely,

A handwritten signature in black ink, appearing to read "Ed Sullivan", written in a cursive style.

Edward O. Sullivan, Commissioner
Department of Environmental Protection

pc: Mark Hyland, MEDEP
Michael Nalipinski, USEPA
Hank Lowman, BCA